Pre-Design Investigation Memorandum

VOCs in Groundwater at Eastern End of Building 807 and VOCs in Groundwater Near Buildings 808 and 823 Former Oakland Army Base Oakland, California

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ABBREVIATIONS AND ACRONYMS

1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCA	1,2-Dichloroethane
1,1,2-TCA	1,1,2-Trichloroethane
1,1,2,2-TCA	1,1,2,2-Tetrachloroethane
ASTM	American Society of Testing Materials
bgs	Below ground surface
Cal-EPA	California Environmental Protection Agency
CDM	Camp, Dresser & McKee
cis-1,2-DCE	cis-1,2-dichloroethene
cm/sec	Centimeters per second
CSRS-H	California Spatial Reference System-Horizontal
CVOC	Chlorinated volatile organic compound
Dhc. ethenogenes	*Dehalococcoides ethenogenes*
DO	Dissolved oxygen
DOT	Department of Transportation
DPT	Direct-push technology
DTSC	Department of Toxic Substances Control
EDC	Economic Development Conveyance
EKI	Erler and Kalinowski, Inc.
ft/ft	Feet per foot
GPD-ft	Gallons per day per foot
gpm	Gallons per minute
GWRTAC	Ground-Water Remediation Technologies Center
HRC	Hydrogen release compound
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mV	Millivolts
OARB	Oakland Army Base
OBRA	Oakland Base Reuse Authority
ORP	Oxidation-reduction potential
OVM	Organic vapor meter
PCE	Tetrachloroethene
PDIM	Pre-design Investigation Memorandum
PPE	Personal Protective Equipment
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAP	Remedial Action Plan
RMP	Risk Management Plan
RDIP	Remedial Design Implementation Plan
RWQCB	Regional Water Quality Control Board

ABBREVIATIONS AND ACRONYMS

TCE	Tricholorethene
TOC	Total organic carbon
trans-1,2-DCE	trans-1,2-Dichloroethene
USA	Underground Services Alert
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USTHMA	U.S. Army Toxic and Hazardous Materials Agency
UST	Underground storage tank
VOC	Volatile organic compound

1.0 INTRODUCTION

On behalf of the Oakland Base Reuse Authority (OBRA), Northgate Environmental Management, Inc. (Northgate) has prepared this Pre-Design Investigation Memorandum (PDIM) for two Remedial Action Plan (RAP) Sites at the Oakland Army Base (OARB) in Oakland, California. The two Sites include the *VOCs [volatile organic compounds] in Groundwater at Eastern End of Building 807* site and the *VOCs in Groundwater Near Buildings 808 and 823* site. This PDIM has been prepared in accordance with, and as a continuation of, the process described in the *Final Remedial Action Plan* (RAP) (Erler & Kalinowski, Inc. [EKI], 2002a) and the *Final Risk Management Plan* (RMP) (EKI, 2002b). The proposed investigations presented in this PDIM are intended to close critical data gaps in order to prepare effective remedial solutions for these RAP Sites.

This PDIM includes discussions of the following

- Site histories;
- Previous Site investigations;
- Site geology and hydrogeology;
- Current Site issues;
- Pre-design investigation objectives;
- Proposed investigations;
- Field procedures;
- Quality assurance procedures;
- Future reporting; and
- Anticipated project schedule.

Figure 1 shows the location of the former OARB within the San Francisco Bay area and the locations of the RAP sites discussed herein.

Section 2.0 presents Site-specific information for the *VOCs in Groundwater at Eastern End of Building 807* site. Section 3.0 presents Site-specific information for the *VOCs in Groundwater Near Buildings 808 and 823* site. Non-Site-specific information on field procedures, quality assurance (QA) procedures, future reporting and anticipated project schedule are presented in Sections 4.0 through 7.0, respectively.

1.1 RAP Process Continuation

Since this PDIM is a continuation of the RAP process, the following Site-specific sections focus on those issues and recommendations identified in the RAP (EKI 2002a). Likewise, data presented and discussed in this PDIM are restricted to data relevant to the RAP-identified Site-specific issues.

Based on Site-specific issues identified in the RAP, the data and proposed investigations presented in this document are focused on soil and groundwater matrices. Further evaluation of soil vapor and indoor air is not proposed based on the following inputs:

- The California Environmental Protection Agency (Cal-EPA) *Advisory – Active Soil Gas Investigations* (Cal-EPA, 2003) recommends collecting soil gas samples at depths greater than 5 feet below the ground surface (bgs) to reduce the effects of barometric pumping. Due to shallow groundwater at the Sites, this approach to soil gas sampling is not feasible.
- The Department of Toxic Substances Control (DTSC) *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC, 2005) recommends minimum vertical soil gas sampling to evaluate vapor intrusion at 5 and 15 to 20 feet bgs. The DTSC Guidance reiterates the Cal-EPA recommendation against collecting soil gas at depths less than 5 feet bgs due to barometric pumping effects.
- During the RAP process, Remediation Goals were established for soil and groundwater to be protective of human health and the environment. Remediation Goals were not established for soil gas or indoor air, deferring instead to screening performed on soil and groundwater to protect human health and the environment.

1.2 Data Sources and Terminology

The data presented and discussed in this memorandum are stored in OBRA's Master Chemical Database (OBRA, 2005). This database mainly consists of historical soil and groundwater data collected by the U.S. Army, but also includes data collected by other parties after the Army transferred portions of the OARB to OBRA via an Economic Development Conveyance (EDC) in August 2003.

For the purposes of this PDIM, "*historical*" groundwater data refers to any groundwater data collected before August 2003; "*recent*" groundwater data is any data collected during or after August 2003.

2.0 VOCS IN GROUNDWATER AT EASTERN END OF BUILDING 807 SITE

The following sections present the history, previous investigations, geology and hydrogeology, RAP issues, data gap analysis, pre-design investigation objectives, and proposed investigation for the *VOCs in Groundwater at Eastern End of Building 807* site.

2.1 Background and Previous Investigations

Building 807 was constructed in 1942 and used by the Army for short-term storage of supplies (Figure 2). Since at least 1946, Building 807 was used for storage of industrial supplies including drummed solvents, paints, and other industrial chemicals. The building is currently leased to Penn Logistics and D.R. Trucking, and is used for short-term storage of various items in transit. According to the U.S. Army Toxic and Hazardous Materials Agency (USATHMA, 1988), historical information indicates that leakage from damaged drums was allowed to drain into the ballast on the west side of the Knight Railyard, located at the east side of the *VOCs in Groundwater at Eastern End of Building 807* site.

Between 1992 and the present, six primary investigations have been conducted at the *VOCs in Groundwater at Eastern End of Building 807* site by the U.S. Army Corps of Engineers (U.S. Army Corps of Engineeers [USACE], 1993); Kleinfelder (1995, 1997, 1998b); Camp, Dresser & McKee (CDM, 1996); and ICF Kaiser Engineers (Kaiser, 1999). Samples have been collected at a total of 103 locations in this area (Figure 2), which included 96 soil samples, 25 soil vapor samples, 289 groundwater samples, and 4 indoor air samples. There are currently 12 groundwater wells in this area, 11 of which are screened in the shallow water-bearing zone and one of which is screened in the deeper water-bearing zone (Merritt Sand).

2.2 Geology and Hydrogeology

The uppermost soils at the Site consist of artificial fill from ground surface to a depth of 4 to 8 feet below ground surface (bgs). The artificial fill is underlain by layers of sand, silty sand, and silty clay with cumulative thickness ranging between 5 and 10.5 feet. These units are underlain by the 10- to 12-foot thick Younger Bay Mud, which is a laterally extensive silty to sandy shallow marine clay unit. The Younger Bay Mud, in turn, is underlain by Merritt Sand, an eolian deposit that lies approximately 20 feet bgs.

Shallow groundwater at the Site is encountered at approximately 4 to 6 feet bgs within the artificial fill. Previous investigations have concluded that the shallow groundwater gradient at the Site is essentially flat, precluding identification of a definitive groundwater flow direction (IT, 1999; Kaiser, 1999). The Merritt Sand comprises the deeper water-bearing zone at the Site.

Figure 3 presents the potentiometric surface map of the shallow water-bearing zone for March 9, 2005. As shown on Figure 3, overall groundwater flow during the monitoring event was towards the northeast. The hydraulic gradient in the shallow water-bearing zone is calculated to range from approximately 0.0006 to 0.0017 feet per foot (ft/ft).

2.2.1 Aquifer Testing

Aquifer testing was conducted within the sediments comprising the shallow aquifer zone overlying the Younger Bay Mud deposits (Kleinfelder, 1997; 1998b). The aquifer testing consisted of a step drawdown and constant rate pumping test, and a dual-phase extraction pilot test at monitoring well K807EW-1. Water levels were measured in response to testing in nearby temporary piezometers and deep monitoring well K807DW01. The constant rate test was conducted at a pumping rate of 2 gallons per minute (gpm) for approximately 17 hours, at which time testing ceased because drawdown had stabilized. Water levels were measured by hand and using pressure transducers in shallow zone piezometers P-1, -2, -3, -4, -5, -6, and –7 positioned surrounding the extraction well at distances ranging from 9.96 feet (P-3) to 49.29 feet (P-6). Shallow zone piezometer P-8 (90.2 feet from the extraction well) was also monitored to evaluate background water level fluctuations, and deep zone (Merritt Sand) piezometer DW-1 (20.06 feet from the extraction well, 45.5 feet deep) was monitored to evaluate conditions in the deep zone in response to shallow zone pumping. Water levels were corrected to filter out background water level fluctuations prior to analysis.

Maximum corrected drawdown ranged from 0.17 feet at deep zone piezometer P-5 (located 25.45 feet southwest of the extraction well) to 0.50 feet at P-3 (9.96 feet north-northeast). Water levels in deep zone piezometer DW-1 *increased* during pumping up to 1.4 feet due to unknown reasons and remained elevated approximately 0.3 feet above static levels after pumping ceased. Water levels in background piezometer P-8 did not fluctuate greater than approximately 0.05 feet during testing.

Analysis of testing results indicated that the average hydraulic conductivity at the *VOCs in Groundwater at Eastern End of Building 807* site is approximately 6×10^{-3} centimeters per second (cm/sec), which is relatively high for San Francisco Bay margin sediments, but is consistent with typical properties for the types of sandy sediments observed in the shallow aquifer zone. Water levels from DW-1 could not be included in the analysis. The azimuth of maximum transmissivity (2,040 gallons per day per foot [GPD/ft]) was oriented approximately North 81 degrees East, and minimum transmissivity (1,070 GPD/ft) was oriented approximately North 175 degrees East. Despite the relatively high hydraulic conductivity, hydraulic gradients are consistently shallow (approximately 0.0009 ft/ft), resulting in a relatively slow groundwater seepage velocity of approximately 22 feet/year (Kleinfelder, 1997; 1998b). In its analysis, Kleinfelder assumed an average effective porosity of 25 percent, which is typical of silty sands.

Kleinfelder concluded that based on the pumping test results and other observations, groundwater flow in the shallow zone is slow and the Younger Bay Mud deposits effectively confine the Merritt Sand aquifer zone thereby restricting groundwater flow between the two zones. Kleinfelder also concluded that contaminants have not impacted the Merritt Sand aquifer zone and are not likely to migrate from the shallow zone through the Younger Bay Mud deposits.

2.2.2 Tidal Study

The tidal study was conducted on a base-wide basis and concluded that the area of tidal influence extends approximately 600 feet inland from the harbor, having no discernable influence at the *VOCs in Groundwater at Eastern End of Building 807* site.

2.3 RAP Environmental Issues and Data Gap Analysis

Section 4.4.3.2 of the RAP (EKI, 2002a) identifies chlorinated volatile organic compounds (CVOCs) in groundwater at the eastern end of Building 807 as the environmental issue of concern at this Site. The following sections discuss soil and groundwater data collected at the Site for CVOCs with Remediation Goals. Soil gas and indoor air data collected at the *VOCs in Groundwater at Eastern End of Building 807* site are not discussed in this PDIM, as Remediation Goals for these matrices were not established in the RAP.

2.3.1 CVOCs in Soil

A total of 80 soil samples collected at the *VOCs in Groundwater at Eastern End of Building 807* site have been analyzed for CVOCs. The distribution of these soil samples, including locations at which CVOCs have been detected, is shown on Figure 4. The CVOC analytical results for these samples are listed in Table 1. No CVOCs have been detected exceeding Remediation Goals in soil at this Site. CVOCs detected in soil below Remediation Goals in soil include 1,1,2,2-tetrachloroethane (1,1,2,2-TCA); cis-1,2-dichloroethene (cis-1,2-DCE); methylene chloride; tetrachloroethene (PCE); trans-1,2-dichloroethene (trans-1,2-DCE); trichloroethene (TCE); and vinyl chloride.

Figure 5 shows analytical results for vinyl chloride in soil samples. Vinyl chloride has been detected in soil in three samples collected at two locations: ICFMW201 at 11.5 feet bgs (0.01 milligrams per kilogram [mg/kg]), ICFMW201 at 11.75 feet bgs (0.013 mg/kg), and ICFMW202 at 11.25 feet bgs (0.004 mg/kg). The Remediation Goal for vinyl chloride in soil is 0.05 mg/kg. As discussed in Section 2.3.2.1, the distribution of vinyl chloride detections in soil is consistent with the highest concentrations of vinyl chloride detected in groundwater and, since these samples were collected from saturated soil, likely reflects groundwater contamination. Based on the distribution of vinyl chloride in soil (Figure 5) and previous analysis of Site soil data included in the RAP (EKI, 2002a), no soil data gaps for CVOCs with Remediation Goals exist at this Site.

2.3.2 CVOCs in Groundwater

A total of 227 groundwater samples collected at the *VOCs in Groundwater at Eastern End of Building 807* site have been analyzed for CVOCs, including 65 grab groundwater samples and 162 groundwater samples collected from monitoring wells. The distribution of these groundwater samples is shown on Figure 6. The CVOC analytical results for these samples are listed in Table 2. As discussed below, vinyl chloride is the only CVOC currently exceeding its Remediation Goal.

2.3.2.1 CVOCs in Shallow Groundwater

CVOCs detected exceeding Remediation Goals in historical shallow groundwater samples include TCE and vinyl chloride. CVOCs detected in historical shallow groundwater samples below Remediation Goals include: 1,1,2,2-TCA; 1,1,2-trichloroethane (1,1,2-TCA); 1,1-dichloroethane (1,1-DCA); 1,1-dichloroethene (1,1-DCE); 1,2-dichloroethane (1,2-DCA); carbon tetrachloride; chloroform; cis-1,2-DCE; methylene chloride; PCE; and trans-1,2-DCE.

Vinyl chloride has been detected exceeding its Remediation Goal in recent shallow groundwater samples at wells ICFMW202 and ICFMW222. TCE has not been detected exceeding its Remediation Goal in shallow groundwater since 2002. CVOCs detected in recent shallow groundwater samples below Remediation Goals include: 1,1,2,2-TCA; 1,1,2-TCA; 1,1-DCE; 1,2-DCA; cis-1,2-DCE; PCE; trans-1,2-DCE; and TCE. No recent CVOC data for deeper groundwater has been collected.

Figure 7 shows the historical maximum detections of vinyl chloride in shallow groundwater at the Site. The detections exceeding the Remediation Goal are clustered outside the eastern end of Building 807, with most detections below the Remediation Goal also clustered within this area. Vinyl chloride analytical results for the most recent monitoring well sampling events for each well (Figure 8) indicate that groundwater in wells ICFMW202 and ICFMW222 continue to exceed the Remediation Goal, and detectable levels of vinyl chloride are present below the Remediation Goal in four nearby wells located within approximately 200 feet of well ICFMW202.

Based on the historical (Figure 7) and recent (Figure 8) distribution of vinyl chloride detections in groundwater, the data gaps for CVOCs in shallow groundwater at this Site are:

- The current lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater northeast of well ICFMW202;
- The current lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater southwest of well ICFMW202;
- The current lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater south of well ICFMW222;

- The current lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater east of well ICFMW222; and
- The current concentration of vinyl chloride in shallow groundwater beneath the eastern end of Building 807.

2.3.2.2 CVOCs in Deeper Groundwater

No CVOCs have been detected exceeding Remediation Goals in historical groundwater samples collected from the deeper water-bearing zone (Merritt Sand) well at the Site (K807DW-1). CVOCs detected in historical samples from well K807DW-1 below Remediation Goals include cis-1,2-DCE and methylene chloride.

These two chemicals have been detected infrequently, and at very low concentrations in historical deeper groundwater samples from well K807DW-1. Cis-1,2,-DCE was detected at a concentration of 0.9 micrograms per liter (µg/L) in 1 out of a total of 16 samples. This detection occurred in 1999 and has not been reproduced in 10 subsequent rounds of sampling. Methylene chloride was sporadically detected four times (out of a total of 16 samples) at a maximum concentration of 3 µg/L. The most recent detection of methylene chloride occurred in 2002; the two subsequent samples collected in 2003 were non-detect. This well has not been sampled since 2003 as it is no longer part of the groundwater monitoring network.

This data suggests that the deeper water-bearing zone has not been impacted by CVOCs, but rather the sporadic low-level detections of VOCs is likely the result of laboratory contamination or cross-contamination. Based on this interpretation, no data gaps exist for deeper groundwater at this Site.

2.4 Investigation Objectives

The objectives of this investigation are to:

- Close data gaps regarding the current lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater;
- Close data gaps regarding the current concentration of vinyl chloride, if any, in shallow groundwater beneath the eastern end of Building 807;
- Provide information on current soil and shallow groundwater conditions required to develop the remedial design; and
- Install wells for conducting future groundwater monitoring and remediation at the site.

2.5 Remedial Technologies

Section 10.2.1.2 of the RAP (EKI, 2002a) identified in-situ bioremediation and in-situ chemical oxidation/reduction as feasible technologies to remediate CVOCs in groundwater at this Site. In-situ chemical oxidation/reduction was favored because of its broad applicability to various CVOCs detected in historical groundwater samples, and due to the limited biodegradability of chlorinated alkenes such as TCE. However, vinyl chloride is the main CVOC of concern at the Site and conditions favoring the reductive dechlorination of vinyl chloride have been observed in shallow groundwater in the vicinity of Building 807. For example, during the March 2005 groundwater monitoring event, low dissolved oxygen (DO) concentrations and redox potential values were measured in water samples collected from the Building 807 area wells. The dissolved oxygen concentration was 0.25 milligrams per liter (mg/L) and the redox potential was -257.3 millivolts (mV) in well K807MW01, indicating the occurrence of anaerobic and highly reduced conditions needed to biodegrade CVOCs. Consistent with these observations, CVOCs typically associated with the reductive dechlorination of TCE (e.g., dichloroethene and vinyl chloride) have been detected in shallow groundwater. Therefore, the proposed investigation will generate data needed to assess both of the above RAP technologies so that the most effective remedial option can be used in the forthcoming Remedial Design Implementation Plan (RDIP)[1]. Factors that will be considered during the RDIP process to select the remedial option include technical feasibility, cost, safety, and schedule.

2.5.1 Chemical Oxidation/Reduction

In-situ chemical oxidation or reduction processes involve injecting a chemical oxidant or reductant into saturated soil, typically using direct-push technology (DPT). Common oxidants include hydrogen peroxide, potassium permanganate, and Fenton's Reagent. Reductants include sodium dithionite and hydrogen sulfide (Ground Water Remediation Technologies Analysis Center [GWRTAC], 1999; U.S. Environmental Protection Agency [USEPA], 1998). The desired result of oxidation/ reduction treatment is the complete transformation of CVOCs in groundwater to less toxic or non-toxic organic species, or water, carbon dioxide, and chloride ions. Potassium

[1] The two remedial technologies selected for further evaluation in the RDIP (chemical oxidation and in-situ bioremediation) are both diffusive flow technologies. These types of technologies were selected, in part, as a result of the heterogeneous and anisotropic nature of the shallow water-bearing zone geology. Application of an advective flow technology (e.g., pump-and-treat) at this site would face greater limitations due to the presence of fine-grained sediments. In contrast, diffusive flow technologies have been proven much more successful in treating tight zones and reducing post-remediation rebound. The additional lithologic and chemical data collected during the PDIM field activities will be incorporated in the RDIP and considered in selecting the most appropriate remedial technology—which accounts for the site hydrology among many other factors—for the site. For example, both coarse- and fine-grained materials will be used in chemical oxidation testing to account for variations in responses of different lithologies at the site. Ultimately, the design of whatever remedial option is selected will use conservative parameters that account for fine-grained target zones.

permanganate will be evaluated further as part of the pre-design investigation, since it readily oxidizes vinyl chloride, is relatively persistent (as compared to hydrogen peroxide and Fenton's Reagent), and generates less heat of reaction than other oxidants.

Data requirements for assessment of this technology and preparation of the RDIP include:

- Lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater;
- Hydrologic parameters of the potential treatment area, including transmissivity, hydraulic conductivity, radius of influence, and porosity (to be derived from data collected by Kleinfelder, 1997);
- Oxidant demand of sediments and groundwater within the potential treatment area; and
- Potential secondary effects (e.g., off-gassing, and formation of precipitates and hexavalent chromium).

2.5.2 In-Situ Bioremediation

Recent monitoring well data indicates that vinyl chloride is the only CVOC in groundwater that exceeds the Remediation Goal at the Site (Section 2.3.2.1). In addition, the data collected between September 2002 and March 2005 shows an overall decline in vinyl chloride concentrations in several wells that have historically exceeded the Remediation Goal. This evidence, in conjunction with the geochemical conditions discussed in Section 2.5 above, suggests that in-situ bioremediation is naturally occurring at the Site via reductive dechlorination mechanisms, although other attenuating mechanisms (advection, diffusion, etc.) may also be contributing to this decline in concentrations.

During 2003, researchers conducted numerous ground-breaking studies on the ability of the bacterium *Dehalococcoides ethenogenes* (*Dhc. ethenogenes*) to reductively dechlorinate recalcitrant CVOCs (Cupples et. al., 2003; He et. al., 2003; and Loeffler et.al., 2003). As a result, various strains of *Dhc. ethenogenes* have been found effective in remediating vinyl chloride, TCE, PCE, and numerous other CVOCs in anaerobic environments. These findings have led to development of commercially-available *Dhc. ethenogenes*-based microbial consortiums and the successful application of these products at numerous similar sites. *Dhc. ethenogenes* appears to be particularly suitable for the *VOCs in Groundwater at Eastern End of Building 807* site as the subsurface conditions are already highly reduced and anaerobic.

In-situ bioremediation can be enhanced by introducing one or more components into the subsurface to accelerate the breakdown of vinyl chloride and other CVOCs. The two general categories of possible components are electron donors (e.g., Hydrogen Release Compound [HRC], molasses, etc.) and microbial consortiums. The pre-design investigation will provide data to assess the need, if any,

to add electron donor substances or bacterial cultures to the subsurface to enhance conditions for vinyl chloride degradation at the Site.

Data requirements for assessment of this technology and preparation of the RDIP include:

- Lateral extent of vinyl chloride exceeding the Remediation Goal in shallow groundwater;
- Hydrologic parameters of the potential treatment area, including transmissivity, hydraulic conductivity, radius of influence, and porosity (to be derived from data collected by Kleinfelder, 1997);
- Presence or absence of *Dhc. ethenogenes* in shallow groundwater at the Site;
- Bioremediation-related parameters of shallow groundwater including DO, oxidation-reduction potential (ORP), pH, conductivity, temperature, alkalinity, ferrous iron, manganese, nitrate, sulfate, methane, carbon dioxide, total organic carbon (TOC), dissolved hydrogen, and ethene.

The above-listed bioremediation parameters will be used to assess whether subsurface conditions are favorable for *Dhc. ethenogenes* populations to grow and utilize CVOCs as terminal electron acceptors. These parameters will aid in the assessment of: (1) physical conditions (i.e., pH and temperature) which may impede or enhance growth, (2) nutrient availability (i.e., iron and manganese) which may also impede or enhance growth, and (3) indicators of the current level of ongoing biological activity (i.e., ethene).

2.6 Proposed Investigation

The scope of the proposed investigation for the *VOCs in Groundwater at Eastern End of Building 807* site is listed in Table 3 and shown on Figure 9. The proposed investigation includes the following activities:

- Installation and development of five new shallow groundwater monitoring wells (807VMW001 through 807VMW005);
- Collection of a total of four saturated soil samples from two new monitoring well pilot borings for bench-scale chemical oxidation treatability testing and hexavalent chromium formation/attenuation analysis;
- Collection of a total of 14 shallow groundwater samples for CVOC analysis during one round of sampling;
- Collection of a total of two shallow groundwater samples for chemical oxidant demand analysis and hexavalent chromium formation/attenuation analysis;

- Collection of a total of six shallow groundwater samples for bioremediation parameter analysis;
- Collection of a total of six shallow groundwater samples for *Dhc. ethenogenes* analysis; and
- Abandonment of deeper groundwater well K807DW-1.

Details regarding monitoring well installation are presented in Section 4.3. Details regarding soil sample collection and analysis are presented in Sections 4.4 and 5.0, respectively. Details regarding groundwater sample collection and analysis are presented in Sections 4.5 and 5.0, respectively.

2.6.1 Chemical Oxidation Testing

For highly reduced environments containing organic carbon, the oxidant demand can be several orders of magnitude higher than the "stoichiometric" dose requirement to oxidize vinyl chloride alone. Therefore, the chemical oxidation evaluation will include a series of batch tests to measure the potassium permanganate demand of Site sediments and groundwater. This information will be used to estimate the total potassium permanganate demand per kilogram of soil in the proposed remediation area. Separate batch tests will be performed for samples containing varying amounts of sand, silt, and clay.

In addition, potassium permanganate has the potential to oxidize chromium to the hexavalent form. Therefore, samples will be measured for total and hexavalent chromium before and after treatment with potassium permanganate. If significant hexavalent chromium is generated, then the natural attenuation capacity of the soil may be assessed to reduce hexavalent chromium back to trivalent chromium. The batch treatment samples will be observed for formation of precipitates (e.g., manganese oxides) and gas bubbles that could potentially affect the permeability of the subsurface treatment zone.

The two locations selected for soil and groundwater chemical oxidation testing were chosen based on several factors:

- Practical considerations suggest soil sampling would be most efficiently performed at locations where new shallow groundwater monitoring wells are proposed;
- Soil and groundwater results need to be paired in order to perform an effective analysis of the oxidation testing data; and
- The two proposed shallow groundwater monitoring well locations are located to be reprsentative of the potential treatment area.

2.6.2 In-Situ Bioremediation Testing

Bioremediation parameters include DO, ORP, pH, conductivity, and temperature collected by field instrumentation, and alkalinity, ferrous iron, manganese, nitrate, sulfate, methane, carbon dioxide, TOC, dissolved hydrogen, and ethene by laboratory analysis. This information will be used to assess conditions favoring bacterial transformation of CVOCs, and whether or not the addition of electron donors (e.g., molasses, cheese whey, HRC, or other substances) is needed to augment the naturally-occurring breakdown of CVOCs. Additionally, *Dhc. ethenogenes* testing will be performed to assess the presence or absence of this organism, and the potential need to add a microbial culture to the treatment zone.

The three locations selected for groundwater bioremediation parameter and *Dhc. ethenogenes* testing were chosen based on several factors:

- Bioremediation parameters and *Dhc. ethenogenes* results need to be paired in order to perform an effective analysis of the in-situ bioremediation testing data;
- One set of in-situ bioremediation testing data should be collected at the location of the highest known vinyl chloride groundwater concentrations (ICFMW202); and
- At least two additional sets of in-situ bioremediation testing data should be collected at locations representative of the potential treatment area.

3.0 VOCS IN GROUNDWATER NEAR BUILDINGS 808 AND 823 SITE

The following sections present the history, previous investigations, geology and hydrogeology, RAP issues, data gap analysis, pre-design investigation objectives, and proposed investigation for the *VOCs in Groundwater Near Buildings 808 and 823* site.

3.1 Background and Previous Investigations

Building 808 was completed in 1942 and used by the Army as a general purpose warehouse (Figure 9). The building is currently occupied by Pacific Coast Container and used for short-term storage of various items in transit.

Building 823 was constructed in 1942 (Figure 10). Army historical documents show that Building 823 contained a paint room, paint booth finishing room, and carpenter shop. Currently, the building is occupied by Eron Ersch Construction and used for woodworking. The RAP references a report by the Army Industrial Hygiene Laboratory, dated December 1944, indicating that Army personnel stripped paint with chemicals that included chlorinated solvents. IT Corporation (IT, 2000) states that Building 823 was also used as a heavy equipment maintenance facility, however, the locations and types of equipment and chemicals that were involved with this operation are unknown.

Identified chemical release locations near Building 823 include former UST A and the volatile organic compound (VOC)-impacted groundwater near Buildings 808 and 823. Former UST A was removed in 1990 and received closure from the Regional Water Quality Control Board (RWQCB) (IT, 2000). Besides petroleum hydrocarbons and related constituents associated with UST A, no residual chemical sources in soil have been identified at Building 823 (EKI, 2002a).

Between 1989 and the present, six primary investigations have been conducted in the Building 808/ 823 Area by SCS Engineers (1989, 1991, 1996), Petroleum Engineering (1990), Kleinfelder (1998a), and IT (2000). Samples have been collected at a total of 42 locations in this area (Figure 10), which includes 28 soil samples and 68 groundwater samples. There are currently three shallow water-bearing zone groundwater wells in this area.

3.2 Geology and Hydrogeology

The uppermost soils at the Site consist of artificial fill from ground surface to a depth of 4 to 8 feet bgs. The artificial fill is underlain by layers of sand, silty sand, and silty clay with cumulative thickness ranging between 5 and 10.5 feet. These units are underlain by the 10- to 12-foot thick Younger Bay Mud, which is a laterally extensive silty to sandy shallow marine clay unit. The Younger Bay Mud, in turn, is underlain by the Merritt Sand, an eolian deposit that lies about 20 feet bgs based on lithologic information from the nearby *VOCs in Groundwater at Eastern End of Building 807* site.

Shallow groundwater at the Site is encountered at approximately 4 to 6 feet bgs. Previous investigations have concluded that the shallow groundwater gradient at the Site is essentially flat, precluding identification of a definitive groundwater flow direction (IT, 1999; Kaiser, 1999). A potentiometric surface map of the shallow water-bearing zone for this Site is not presented in the PDIM due to the lack of data more recent than 2002. However, additional information on the potentiometric surface of the shallow water-bearing zone for this Site will be collected as discussed under Section 3.5.

3.3 RAP Environmental Issues and Data Gap Analysis

Section 4.4.3.3 of the RAP (EKI, 2002a) identifies CVOCs in groundwater near Buildings 808 and 823 as the environmental issue of concern at this Site. The following sections discuss soil and groundwater data collected at the Site for CVOCs with Remediation Goals.

3.3.1 CVOCs in Soil

A total of 15 soil samples collected at the *VOCs in Groundwater Near Buildings 808 and 823* site have been analyzed for CVOCs. The distribution of these soil samples, including locations at which CVOCs have been detected, is shown on Figure 11. The CVOC analytical results for these samples are listed in Table 4. No CVOCs have been detected exceeding Remediation Goals in soil at this Site. CVOCs detected in soil below Remediation Goals in soil include: cis-1,2-DCE; methylene chloride; and vinyl chloride.

Figure 12 shows analytical results for vinyl chloride in soil samples. Vinyl chloride was detected in one soil sample collected at 7.3 feet bgs in boring ICF11S2 (0.0095 mg/kg). The Remediation Goal for vinyl chloride in soil is 0.05 mg/kg. This detection of vinyl chloride in soil is within 50 feet of the two highest concentrations of vinyl chloride detected in grab groundwater samples and, since this sample was collected from saturated soil, likely reflects groundwater contamination. Based on the distribution of vinyl chloride in soil (Figure 12) and previous analysis of Site soil data performed under the RAP (EKI, 2002a), no soil data gaps for CVOCs with Remediation Goals exist at this Site.

3.3.2 CVOCs in Groundwater

A total of 37 groundwater samples collected at the *VOCs in Groundwater Near Buildings 808 and 823* site have been analyzed for CVOCs, including 29 grab groundwater samples and 8 groundwater samples collected from monitoring wells. The distribution of these groundwater samples is shown on Figure 13. The CVOC analytical results for these samples are listed in Table 5.

CVOCs detected in historical groundwater samples below Remediation Goals include: 1,1-DCE; chloroform; cis-1,2-DCE; methylene chloride; trans-1,2-DCE; and TCE. Vinyl chloride was detected exceeding its Remediation Goal in grab groundwater samples collected at locations 11S49 and 11S50 (Figure 14).

The two detections exceeding the Remediation Goal are located immediately north of Building 808 (between Buildings 808 and 823). Both exceedances were detected in grab groundwater samples collected in January 2000 (IT, 2000), as shown on Figure 14. Shallow groundwater monitoring wells were subsequently installed immediately adjacent to these locations and sampled for CVOCs in April 2000. These data, which constitute the latest monitoring well sampling data from the Site (Figure 15), indicate that vinyl chloride was not detected at concentrations exceeding the Remediation Goal. Vinyl chloride was not detected in monitoring well SMW-33 in February 2000. No recent groundwater data for CVOCs exists at this Site. The latest groundwater sampling event at this Site took place in 2002 and consisted of six grab groundwater samples (Table 5).

Based on the historical (Figures 14 and 15) distribution of vinyl chloride detections in groundwater, the data gap for CVOCs in shallow groundwater at this Site is the current concentrations of vinyl chloride in shallow groundwater at the Site.

3.4 Investigation Objectives

A summary of the proposed investigation for the *VOCs in Groundwater Near Buildings 808 and 823* site is presented in Table 6. The objective of this investigation is to determine whether current vinyl chloride concentrations in shallow groundwater at the site exceed the Remediation Goal.

3.5 Proposed Investigation

The proposed investigation for the *VOCs in Groundwater Near Buildings 808 and 823* site consists of collecting four consecutive quarters of groundwater samples for CVOCs in wells ICFMW212, ICFMW213, and SMW-33 (Figure 16). Details regarding CVOC sample collection and analysis are presented in Sections 4.4 and 5.0, respectively.

If the monitoring results indicate that CVOCs are not present in the groundwater at concentrations exceeding the Remediation Goals, then OBRA may request closure of the *VOCs in Groundwater Near Buildings 808 and 823* site as a RAP site. If the monitoring results indicate that CVOCs are present in the groundwater at concentrations consistently exceeding the Remediation Goals, OBRA will review existing data in light of the preferred remedy identified in Section 10.2.1.3 of the RAP (in-situ bioremediation) and may issue a supplemental PDIM in the event additional data are required to proceed with the selected remedy.

4.0 FIELD PROCEDURES

Field work for the proposed investigations at both Sites will be conducted in compliance with all applicable documents, including the RAP (EKI, 2002a), RMP (EKI, 2002b), the Final Groundwater Monitoring Plan (EKI, 2004), and the *Site-Wide Quality Assurance Project Plan* (QAPP) (Veridian, 2005). Procedures for the proposed field work for the *VOCs in Groundwater at Eastern End of Building 807* site are covered under Sections 4.1 through 4.10. Procedures for the proposed field work for the *VOCs in Groundwater Near Buildings 808 and 823* site are covered under Sections 4.1, 4.5, 4.7, 4.9 and 4.10.

4.1 Field Work Preparation

The following preliminary tasks will be performed prior to initiating field work at each of the sites:

- Obtain applicable permits to install monitoring wells from the County of Alameda Public Works Agency;
- Coordinate access to the site, as needed, with OBRA and any tenants who may be impacted by the proposed field work;
- Mark proposed monitoring well locations in the field (shown on Figure 9) as allowed by access and subsurface clearance;
- Notify Underground Services Alert (USA) of planned subsurface work at least 48 hours prior to initiating subsurface work;
- Employ the services of a private underground utility locating company to clear proposed monitoring well locations with respect to potential underground utilities;
- Employ the services of a licensed drilling company (compliant with 40 CFR 1910.120 for health and safety requirements for its employees and as described below for site-specific operations on EDC Property in accordance with the RAP [EKI, 2002a]) to perform all planned drilling activities at the Sites; and
- Prepare a site-specific Health and Safety Plan for review and approval by the DTSC.

4.2 Borehole Logging

A California professional geologist or civil engineer (or a geologist or engineer working under the supervision of one of these registered professionals) will collect all soil and groundwater samples. Sediments encountered during drilling will be classified using the Unified Soil Classification System in accordance with the American Standard for Testing Materials (ASTM) Method D-2488 (Visual-Manual Method). Field personnel will pay particular attention to and note layering, depth, thickness, and distribution of visually-impacted soil or groundwater (i.e., notation of free hydrocarbon product,

globules, or sheen). During all drilling, sampling, and excavating activities, field personnel will use an organic vapor meter (OVM) to screen for organic vapors. Field personnel will include these field measurements on the borehole logs.

4.3 Monitoring Well Installation

A California professional geologist or civil engineer (or a geologist or engineer working under the supervision of one of these registered professionals) will install groundwater monitoring wells in compliance with protocols described in Section 2.2 of Appendix B of the QAPP (Veridian, 2005). Monitoring wells will be developed in compliance with Section 2.3 of Appendix B of the QAPP (Veridian, 2005). All pilot boreholes will be logged as described in Section 4.2, and all wells will be completed as described in Section 4.6. New shallow groundwater monitoring wells will be screened from above the top of the shallow groundwater table (about 4 feet bgs) to the top of the Younger Bay Mud unit (approximately 15 to 20 feet bgs).

4.4 Soil Sample Collection

Soil samples will be collected from the monitoring well pilot boreholes using sample collection and handling methods described in Section 1.2.1 of Appendix B of the QAPP (Veridian, 2005).

4.4.1 Chemical Oxidation Treatability Testing of Soils

Two soil samples will be collected from each borehole at depths representing coarse and fine-grained sediment intervals. Approximately 500 grams of soil per sample will be collected for each sediment type, placed in a clean glass jar, and stored in a chilled ice chest, for shipment to the treatability testing laboratory for chemical oxidation testing, as described in Section 2.6.1 above.

4.5 Groundwater Sample Collection

Monitoring wells will be sampled in a sequence beginning with the well that has the lower anticipated concentrations of the contaminant(s) of concern and proceeding to the well exhibiting higher concentrations, based on the latest chemical analyses of water samples from the wells. Prior to sampling any well, all tools and equipment to be used will be thoroughly decontaminated as described in Section 1.1 of Appendix B of QAPP (Veridian, 2005). At each well to be sampled, the depth to water and depth to the bottom of the well will be measured and recorded. This information will be used to calculate the volume of water in the well casing. Each well will also be checked for the presence of floating product on the water surface in the well. Monitoring wells will be purged and sampled utilizing low-flow techniques, as discussed in Section 2.4 of Appendix B of the QAPP (Veridian, 2005). Field protocols as described in the QAPP will be followed for collection and management of groundwater samples.

4.5.1 Chemical Oxidation Treatability Testing of Groundwater

Groundwater samples will be collected in duplicate from selected wells and placed in labeled 1-liter glass or plastic bottles. The bottles will be stored in a chilled ice chest and shipped to the treatability study laboratory for bench scale testing and analyses.

4.5.2 *Dhc. etheneogenes* Testing of Groundwater

Groundwater will be tested for the presence of *Dhc. ethenogenes* using Bio-Trap™ samplers or an equivalent device. Such bacterial sampling devices generally consist of a porous Teflon cylinder filled with beads or plates that contain activated carbon. The activated carbon, in turn, acts as a substrate for bacterial colonization. The sampling device is lowered into the well and remains suspended in groundwater for an amount of time prescribed by the manufacturer/laboratory (i.e., generally 30 days). At the end of the field colonization period, the sampling devices are retrieved from the wells, bagged, tagged, placed on ice in a cooler, and sent overnight to the laboratory for analysis. The laboratory then performs a DNA analysis of the bacteria that have colonized the traps to identify the target organism, which in this case would be *Dhc. ethenogenes.*

4.6 Restoration of Investigation Areas

Monitoring well installation locations will be completed with flush-mounted, traffic-rated well boxes and the surface completion for surrounding area will be matched to existing conditions.

4.7 Equipment Decontamination

All down-hole equipment will be decontaminated prior to use in order to minimize the potential for cross-contamination of samples and locations. All reusable sampling equipment will be decontaminated prior to initial use and between each subsequent use. All disposable sampling equipment will be used only once and properly disposed of following use. Shovels, trowels, spatulas, spoons, and other reusable sampling equipment will be decontaminated before each use to minimize the opportunity for cross-contamination of samples. Decontamination of the sampling equipment will be performed in a designated area approved by OBRA by either steam cleaning, or washing in a solution of Alconox®, or equivalent non-phosphate detergent, followed by rinsing with clean water, then rinsing with distilled water. All wastewater generated from equipment decontamination will be collected, contained, and disposed of at an approved location (Section 1.1 of Appendix B of QAPP [Veridian, 2005]).

4.8 Survey of Monitoring Wells and Sampling Locations

Following completion of new monitoring wells at the Site, the horizontal and vertical coordinates of the top of casing for all groundwater monitoring wells at the Site will be surveyed in compliance with GeoTracker requirements[1]. These requirements include:

- Surveying will be performed by a California-licensed land surveyor;
- Horizontal coordinates (X and Y) will be determined with Third Order methods using a minimum of two reference points: California Spatial Reference System-Horizontal (CSRS-H) or two horizontal geodetic control points derived from the CSRS-H;
- Horizontal coordinates will be reported in decimal degrees to a precision of seven decimal points and referenced to the NAD 83 Datum;
- Vertical coordinates (Z) will be determined with Third Order methods using a minimum of two geodetic control points with one of the following three methods: conventional differential leveling, trigonometric leveling, or conventional elevation surveying;
- Vertical coordinates will be determined to within 0.01 feet and referenced to the NAVD 88 Datum; and
- Accuracy of the horizontal and vertical coordinates will be reported at a 95 percent confidence interval in centimeters.

Survey data will be provided to EKI in hard copy tabulation and as an electronic data deliverable. EKI will add the surveyed coordinates at the site to the OBRA Environmental Database.

4.9 Investigation-Derived Waste Management

All soil cuttings and other investigation-derived waste will be placed in sealable Department of Transportation (DOT) approved 55-gallon drums or 5-gallon buckets. Soil, used personal protective equipment (PPE), wastewater/rinsate, and other decontamination liquids will be segregated by placing these wastes according to type in labeled separate 55-gallon drums or 5-gallon buckets. Drums and buckets will be transported to an on-site temporary storage location designated by OBRA representatives. Northgate will assist OBRA with waste classification and coordination so wastes can be disposed by OBRA at appropriately permitted off-site facilities. Investigation-derived wastes will be managed for disposal by OBRA in accordance with applicable laws and regulations. Signing of manifests, if required, and costs of transportation and off-site disposal of the investigation-derived waste, will be the responsibility of OBRA.

[1] http://www.waterboards.ca.gov/cwphome/ust/cleanup/electronic_reporting/docs/GeoTrackerSurvey_XYZ_4_14_05.pdf

4.10 Health and Safety

Health and safety policies, procedures, and protocols to be followed during this investigation will be presented in the *Draft Pre-Design Investigation Health and Safety Plan: VOCs in Groundwater at Eastern End of Building 807 and VOCs in Groundwater Near Buildings 808 and 823, Former Oakland Army Base, Oakland, California* (in preparation).

5.0 QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) measures for the proposed investigations will be conducted in compliance with the RAP (EKI, 2002a), RMP (EKI, 2002b), the *Final Groundwater Monitoring Plan* (EKI, 2004), and the QAPP (Veridian, 2005). Compliance with these documents will ensure that analytical data produced during these investigations will be of known and sufficient quality to allow for appropriate and effective management of chemically-impacted soil, groundwater, and debris. The established QA/QC procedures have been specifically designed to facilitate the quick decision process necessary to conduct cost-effective remediation concurrently with redevelopment construction activities. Aspects of these investigations that will be governed by established QA/QC procedures include project management, data generation and acquisition, assessment and oversight, and data validation and usability.

6.0 REPORTING

Following completion of the initial field investigations (*viz.* excluding second, third and fourth quarter groundwater monitoring), Northgate will prepare a letter report summarizing the completed fieldwork for submittal to OBRA. The letter report will include a brief description of the work performed, field methods, observations, and significant findings. This report will also include attachments including the following:

Analytical data summary tables;

- Field notes;
- Borehole logs;
- Well construction logs;
- Development logs;
- Sampling logs;
- Calibration logs;
- Field parameter logs;
- Air monitoring logs;
- Chain- of-custody forms;
- Permits:
- Survey data; and
- An inventory of investigation-derived waste left at the Sites.

Laboratory analytical results will be reported from the OBRA-approved analytical laboratory directly to EKI in hard copy and as an electronic data deliverables suitable for entry in the OBRA Environmental Database. Following data validation, the results of the pre-design investigation will be incorporated into the Draft RDIP to be prepared for the *VOCs in Groundwater at Eastern End of Building 807* site. If the *VOCs in Groundwater Near Buildings 808 and 823* site is not closed as a RAP site, the results of the pre-design investigation will also be incorporated into the Draft RDIP.

7.0 SCHEDULE

Fieldwork will proceed within 4 weeks of approval of this PDIM and the associated health and safety plan. It is anticipated that field activities and treatability testing at the *VOCs in Groundwater at Eastern End of Building 807* site will require approximately 2 months to complete, and that field activities at the *VOCs in Groundwater Near Buildings 808 and 823* site will require one day per quarter. Assuming the scope of work in this PDIM is approved by the end of September 2005, Northgate anticipates issuing a data summary report for the *VOCs in Groundwater at Eastern End of Building 807* site to the regulators by January 9, 2006. Groundwater data for the four quarterly monitoring events at the *VOCs in Groundwater Near Buildings 808 and 823* site will be submitted to the regulators 6 weeks after each event. A comprehensive groundwater monitoring report for the *VOCs in Groundwater Near Buildings 808 and 823* site will be issued to the regulators by August 1, 2006.

8.0 REFERENCES

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TABLES

Table 1
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Soil
Former Oakland Army Base, Oakland, California
All results in milligrams per kilogram

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	HEXACHLOROBUTADIENE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			3.8	2.7	2.1	1.7	0.2	0.8	0.1	0.7	0.1	0.9	18	2	46	4.8	2.8	38	2.5	3,600	0.05
ACU7S1	0	6/7/1993	<0.01																<0.01		
ACU7S1	5	6/7/1993	0.0083																<0.0021		
ACU7S1	6	6/7/1993	<0.0021																<0.0021		
ACU7S10	6	6/7/1993	<0.0022																<0.0022		
ACU7S11	6	6/7/1993	0.019																<0.0022		
ACU7S12	3	6/7/1993	0.067																0.019		
ACU7S2	6	6/7/1993	0.014																<0.0022		
ACU7S9	6	6/8/1993	<0.0022																<0.0022		
BB-3	5	9/25/1991	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.05		<0.01	<0.01	<0.01	<0.03
BB-3	5.5	9/25/1991													<0.03						
CU7RR-04	0	10/30/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7RR-05	0	10/29/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7RR-10	0	10/30/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7WH-61	0	10/28/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	0.009	<0.005	<0.005	<0.005
CU7WH-61	6	10/26/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	0.007	<0.005	<0.005	<0.005
CU7WH-63	0	10/26/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7WH-66	0	10/26/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7WH-66	6	10/26/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ICF11S15	1	10/29/1998	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	0.019	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064
ICF11S15	1.5	10/29/1998	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	0.054	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075
ICF11S15	4.5	10/29/1998	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	0.035	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058
ICF11S16	1	10/29/1998	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	0.028	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058
ICF11S16	4.2	10/29/1998	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	0.038	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055
ICFMW201	3.7	4/22/1999	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054	<0.0054	<0.0054	<0.054	<0.0054	<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.011
ICFMW201	11.5	4/22/1999	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.085	<0.0085	0.045	<0.085	<0.0085	<0.085	<0.0085	0.026	<0.0085	<0.0085	0.01
ICFMW201	11.75	4/22/1999	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.081	<0.0081	0.052	<0.081	<0.0081	<0.081	<0.0081	0.047	<0.0081	<0.0081	0.013
ICFMW202	4.5	4/22/1999	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054	<0.0054	<0.0054	<0.054	<0.0054	<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.011

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Former Oakland Army Base, Oakland, California
All results in milligrams per kilogram

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	HEXACHLOROBUTADIENE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			3.8	2.7	2.1	1.7	0.2	0.8	0.1	0.7	0.1	0.9	18	2	46	4.8	2.8	38	2.5	3,600	0.05
ICFMW202	11.25	4/22/1999	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055	<0.0055	<0.0055	<0.055	<0.0055	<0.055	<0.0055	<0.0055	<0.0055	<0.0055	0.004
ICFU7S15	2.5	3/13/1998	<0.0055	<0.0055	<0.0055	<0.0055		<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055		<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055
ICFU7S3	2	3/11/1998	<0.0055	<0.0055	<0.0055	<0.0055		<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055		<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055
ICFU7S3	2.5	3/11/1998	<0.0054	<0.0054	<0.0054	<0.0054		<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054
ICFU7S3	13.5	3/11/1998	<0.0065	<0.0065	<0.0065	<0.0065		<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065		<0.065	<0.0065	<0.0065	<0.0065	<0.0065	<0.065
ICFU7S3	14.5	3/11/1998	<0.0089	<0.0089	<0.0089	<0.0089		<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089		<0.089	<0.0089	<0.0089	<0.0089	<0.0089	<0.089
ICFU7S30	3	3/12/1998	<0.0053	<0.0053	<0.0053	<0.0053		<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053		0.0007	<0.0053	<0.0053	<0.0053	<0.0053	<0.053
ICFU7S30	22	3/12/1998	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		0.002	<0.01	<0.01	<0.01	<0.01	<0.1
ICFU7S30	23	3/12/1998	<0.0089	<0.0089	<0.0089	<0.0089		<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089		0.002	<0.0089	<0.0089	<0.0089	<0.0089	<0.089
ICFU7S4	3	3/12/1998	<0.0054	<0.0054	<0.0054	<0.0054		<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		<0.054	0.002	<0.0054	<0.0054	<0.0054	<0.054
ICFU7S4	22	3/12/1998	<0.0084	<0.0084	<0.0084	<0.0084		<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084	<0.0084		<0.084	<0.0084	<0.0084	<0.0084	<0.0084	<0.084
ICFU7S5	3	3/11/1998	<0.0054	<0.0054	<0.0054	<0.0054		<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054
ICFU7S5	16	3/11/1998	<0.0086	<0.0086	<0.0086	<0.0086		<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086		<0.086	<0.0086	<0.0086	<0.0086	<0.0086	<0.086
ICFU7S5	16.5	3/11/1998	<0.0085	<0.0085	<0.0085	<0.0085		<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085		<0.085	<0.0085	<0.0085	<0.0085	<0.0085	<0.085
ICFU7S6	3	3/12/1998	<0.0054	<0.0054	<0.0054	<0.0054		<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		<0.054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054
K11S108	1	6/19/1997	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.054	<0.054	0.032	<0.0054	<0.0054	<0.0054	<0.054
K11S108	1.5	6/19/1997	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055		<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055	<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055
K807DW-1	16.5	10/28/1996	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.0089	<0.036	<0.0089	<0.0089	<0.0089	<0.0089	<0.018
K807DW-1	19.5	10/28/1996	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.0093	<0.037	<0.0093	<0.0093	<0.0093	<0.0093	<0.019
K807EW-1	3.5	10/23/1996	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.01
K807EW-1	5.5	10/23/1996	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.01
K807MW01	1.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
K807MW01	3.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	0.011		<0.005
K807MW02	1.5	5/25/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
K807MW02	3.5	5/25/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
K807MW03	1.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
K807MW03	3.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005

Table 1
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Soil
Former Oakland Army Base, Oakland, California
All results in milligrams per kilogram

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	HEXACHLOROBUTADIENE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			3.8	2.7	2.1	1.7	0.2	0.8	0.1	0.7	0.1	0.9	18	2	46	4.8	2.8	38	2.5	3,600	0.05
K807MW04	1.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
K807MW04	3.5	1/24/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT01	4	1/17/1994			<0.005	<0.005		<0.005		<0.005		<0.005	0.011				<0.005	<0.005	0.07		<0.005
KU7CPT02	4	1/17/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT03	4	1/17/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	0.011		<0.005
KU7CPT04	4	1/18/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	0.12		<0.005
KU7CPT05	4	1/18/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT06	4	1/18/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT07	4	1/19/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	0.005		<0.005
KU7CPT08	4	1/19/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT09	4	1/19/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT10	4	1/19/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT11	4	1/19/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT12	4	1/20/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7CPT13	4	1/20/1994								<0.005		<0.005									
KU7CPT14	4	1/20/1994								<0.005		<0.005									
KU7CPT15	4	1/20/1994			<0.005	<0.005		<0.005		<0.005		<0.005	<0.005				<0.005	<0.005	<0.005		<0.005
KU7SP11	18	9/25/1996	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.0082	<0.033	<0.0082	<0.0082	<0.0082	<0.0082	<0.016
KU7SP11	21	9/25/1996	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.034	<0.0086	<0.0086	<0.0086	<0.0086	<0.017
KU7SP11	22	9/25/1996	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.034	<0.0086	<0.0086	<0.0086	<0.0086	<0.017
KU7SP12	18	9/25/1996	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.0077	<0.031	<0.0077	<0.0077	<0.0077	<0.0077	<0.015
KU7SP2	9.5	9/25/1996	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	0.0093	<0.0068	<0.0068	<0.027	<0.0068	<0.0068	<0.0068	<0.0068	<0.014
KU7SP8	20	9/25/1996	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.032	<0.0079	<0.0079	<0.0079	<0.0079	<0.016
KU7SP8	22	9/25/1996	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.0081	<0.032	<0.0081	<0.0081	<0.0081	<0.0081	<0.016
KU7SP9	20	9/25/1996	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.034	<0.0086	<0.0086	<0.0086	<0.0086	<0.017
KU7SP9	24	9/25/1996	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.0086	<0.034	<0.0086	<0.0086	<0.0086	<0.0086	<0.017

Table 2
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
ACU7S2	6	6/7/1993	12.8	4		<0.5		5.4					43.4			2.6	38.7	55.8		**331**
ACU7S2		6/7/1993	<0.5	19		4.6		11					<0.4			26	120	76		**640**
ACU7S9		6/8/1993	<0.4	<0.4		<0.4		<0.4					<0.4			1.4	6.2	5.7		**120**
BB-3		10/1/1991	<5	<5		<5		<5	<5	<5	<5	<5		<5	<50		<5		<5	<1
BB-3		1/11/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
BB-3		4/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
BB-3		7/27/1999	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5
BB-3		10/26/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
BB-3		1/31/2000	<0.5	<0.5	<0.5	<0.5	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
CU7RR-03		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-04		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-05		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	0.6	<0.3	<0.3
CU7RR-06		10/30/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.4	0.5		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-07		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-08		10/30/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	29.2	5.2		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-09		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-10		10/30/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7RR-11		10/29/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-45		10/25/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-46		10/25/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.4	0.3	<0.3	<0.3
CU7WH-47	5	10/25/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3
CU7WH-54	5	10/25/1996	<0.3	<0.3	0.9	<0.3		<0.3	<0.3	<0.3	<0.3	0.4		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-56		10/31/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.4	<0.3		<0.3	<0.3	<0.3	12.4	0.5	<0.3	18.1
CU7WH-57		10/31/1996	<0.3	<0.3	<0.3	1.6		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	4.7	1.1	<0.3	**62.3**
CU7WH-59		10/25/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	2.2		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-60		10/31/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.6	0.3	<0.3	1.7
CU7WH-61		10/26/1996	<0.3	<0.3	<0.3	22.9		<0.3	<0.3	<0.3	<0.3	4.1		<0.3	<0.3	<0.3	108.7	5.6	<0.3	**44.5**

Table 2
VOCs in Groundwater at Eastern End of Building 807 Site
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Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
CU7WH-62		10/26/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	203.2	11.3	<0.3	3.1
CU7WH-63		10/26/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	2.6	0.4	<0.3	<0.3
CU7WH-64		10/31/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	0.8	<0.3	<0.3
CU7WH-65		10/26/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	3.8	1.1	<0.3	<0.3
CU7WH-66		10/26/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.7	0.5	<0.3	<0.3
CU7WH-67		10/27/1996	<0.3	<0.3	<0.3	85.4		3.4	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	5.9	15.9	<0.3	**296**
CU7WH-68		10/31/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.3	0.5	<0.3	1.1
CU7WH-68		11/1/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.3	0.8	<0.3	1.1
CU7WH-69		10/25/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	0.3	<0.3	<0.3
ICF11S16	6	10/29/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.73	<0.5	<0.5	0.06	0.08	0.55	<0.5	0.35
ICFMW201	14.5	4/22/1999	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<5	<0.5	0.5	<0.5	<0.5	<0.5
ICFMW201	7	4/22/1999	<2.5	<2.5	<2.5	<2.5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	93	<2.5	<25	<2.5	40	18	<2.5	<2.5
ICFMW201		4/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	72.5	<0.5	<5	<0.5	49.8	13	<0.5	13.7
ICFMW201		5/26/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	83.7	<0.5	<5	<0.5	70.7	5.1	<0.5	**57.5**
ICFMW201		6/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	71	<0.5	<5	<0.5	61	6.7	<0.5	**42.2**
ICFMW201		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	73.9	<0.5	0.6	<0.5	67.3	4.9	<0.5	**66.4**
ICFMW201		10/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	69.1	<0.5	<5	<0.5	53.1	5	<0.5	**66.1**
ICFMW201		1/25/2000	<1	<1	<1	<1	<2.2	<1.8	<1	<1	<1	<1	78	<1	1	<1	55	13	<1	32
ICFMW201		4/14/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	34.3	<0.5	<5	<0.5	25.6	5.7	<0.5	23.8
ICFMW201		6/6/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	31	<0.5	<5	<0.5	15.9	1.2	<0.5	**61.8**
ICFMW201		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	64.1	<0.5	2	<0.5	17.3	3.3	<0.5	25.9
ICFMW201		12/3/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	52.5	<0.5	<5	<0.5	17.3	6.9	<0.5	12.2
ICFMW201		4/12/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	73.8	<0.5	0.3	<0.5	20.8	2.8	<0.5	**42.8**
ICFMW201		3/20/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	40.6	<0.3	<3	<0.5	10.8	1.2	<0.5	**37.8**
ICFMW201		7/23/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	33.5	<0.3	<3	<0.5	6.8	0.97	<0.5	**38.8**
ICFMW201		10/25/2004	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<1	23	<0.5	<5	<0.5	<0.5	<0.5	<1	15
ICFMW201		3/10/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	41	<0.5	<5	<0.5	0.57	<0.5	<1	11

Table 2
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Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
ICFMW202	15	4/22/1999	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
ICFMW202	7	4/22/1999	<0.5	<0.5	<0.5	0.6	<5	<0.5	<0.5	<0.5	<0.5	<0.5	20.9	<0.5	<5	1.2	15.6	36.5	<0.5	16.2
ICFMW202		4/30/1999	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	154	<0.5	<5	1.7	47.2	62.1	<0.5	**89.2**
ICFMW202		5/26/1999	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	249	<0.5	<5	0.8	35.2	32.4	<0.5	**91.2**
ICFMW202		6/30/1999	15	<5	<5	<5	<5	<5	<5	<5	<5	<5	485	<5	<50	<5	69	97	<5	**83**
ICFMW202		7/29/1999	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	1030	<10	<100	<10	81	57	<10	**282**
ICFMW202		10/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5
ICFMW202		1/25/2000	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	2020	<25	<250	<25	300	30	<25	**420**
ICFMW202		4/14/2000	200	10.4	<0.5	9.2	<0.5	1.6	<0.5	<0.5	<0.5	<0.5	1690	<0.5	<5	10.7	216	363	<0.5	**442**
ICFMW202		6/6/2001	3.5	0.7	<0.5	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	101	<0.5	<5	2.7	38	102	<0.5	**69.4**
ICFMW202		9/13/2001	1.3	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	225	<0.5	2	7.6	62.1	76.4	<0.5	**115**
ICFMW202		12/3/2001	61.2	11.5	<0.5	9.5	<0.5	3.1	<0.5	<0.5	<0.5	1.3	192	<0.5	<5	10.6	55.9	224	<0.5	**52.5**
ICFMW202		4/12/2002	88	72	0.5	38.8	<0.5	7.2	<0.5	<0.5	<0.5	0.7	883	<0.5	0.4	48.5	888	**2990**	<0.5	**1070**
ICFMW202		3/20/2003	39.2	1.4	<0.5	7.7	<0.3	0.84	<0.3	<0.3	<0.3	<0.5	118	<0.3	<3	3.5	58.4	170	<0.5	**130**
ICFMW202		7/23/2003	9.88	1.4	<0.5	1.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	164	<0.3	<3	1	30.3	53.6	<0.5	**91**
ICFMW202		10/25/2004	80	15	<2.5	13		4.7	<2.5	<2.5	<2.5	<5	220	<2.5	<25	9.7	120	420	<5	**200**
ICFMW202		3/10/2005	<2.5	54	<2.5	7.2	<2.5	2.7	<2.5	<2.5	<2.5	<5	490	<2.5	<25	20	200	800	<5	**240**
ICFMW221		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.7
ICFMW221		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5
ICFMW221		12/4/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	2
ICFMW221		4/11/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.9
ICFMW221		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	1.4	<0.3	<0.3	<0.3	<0.5	0.4	<0.3	<3	<0.5	<0.5	<0.3	<0.5	0.5
ICFMW221		7/22/2003	<0.3	<0.3	<0.5	<0.5	<0.3	1.9	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<3	<0.5	<0.5	<0.3	<0.5	1.7
ICFMW221		10/25/2004	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<1	1.3	<0.5	<5	<0.5	<0.5	<0.5	<1	0.71
ICFMW221		3/10/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<1	<0.5
ICFMW222		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.2	<0.5	<5	<0.5	1.1	<0.5	<0.5	17.2
ICFMW222		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	10.1	<0.5	2	<0.5	<0.5	<0.5	<0.5	14.4

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Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
ICFMW222		11/30/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.6	<0.5	2	<0.5	0.8	<0.5	<0.5	15.3
ICFMW222		4/11/2002	<0.5	<0.5	<0.5	1.4	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	41	<0.5	0.7	<0.5	2.4	<0.5	<0.5	**109**
ICFMW222		3/20/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	86	<0.3	<3	<0.5	0.7	<0.3	<0.5	**99**
ICFMW222		7/23/2003	<0.3	<0.3	<0.5	0.6	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	59.1	<0.3	<3	<0.5	0.7	<0.3	<0.5	**64.1**
ICFMW222		10/25/2004	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<1	4.3	<0.5	<5	<0.5	<0.5	<0.5	<1	6.4
ICFMW222		3/10/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	39	<0.5	<5	<0.5	0.78	2.8	<1	**67**
ICFU7S15	12	3/12/1998	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
ICFU7S3	10	3/11/1998	<2.5	<2.5	<2.5	<2.5		<2.5	<2.5	<2.5	<2.5	<2.5	134	<2.5	<25	<2.5	23	19	<2.5	**58**
ICFU7S30	16	3/12/1998	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	1.4
ICFU7S4	16.5	3/12/1998	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	4.6	<0.5	0.3	<0.5	1.3	<0.5	<0.5	<0.5
ICFU7S5	13	3/11/1998	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
ICFU7S6	12	3/12/1998	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<5	<0.5	0.5	<0.5	<0.5	1.1
K807DW-1	30.5	11/8/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807DW-1	30.5	2/13/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807DW-1	30.5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807DW-1		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		4/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		10/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		1/25/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		2/2/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		4/13/2000	<0.5	<0.5	<0.5	<0.5	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		9/12/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		12/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		4/11/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
K807DW-1		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<3	<0.5	<0.5	<0.3	<0.5	<0.3

Table 2
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
K807DW-1		7/22/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	<0.5	<0.3	<3	<0.5	<0.5	<0.3	<0.5	<0.3
K807EW-1		11/7/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	30	<0.5	<10	<0.5	16	<0.5	<0.5	**59**
K807EW-1		2/14/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	35	<0.5	<10	<0.5	15	<0.5	<0.5	**81**
K807EW-1	4	7/2/1997	<0.5	<0.5	<0.5	<0.5	<0.5	0.89	<0.5	<0.5	<0.5	<0.5	13	<0.5	<10	<0.5	7.5	<0.5	<0.5	**47**
K807EW-1		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	3.6	<0.5	<5	<0.5	1	<0.5	<0.5	16.2
K807EW-1		4/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<5	<0.5	2.7	<0.5	<0.5	17.3
K807EW-1		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3	<0.5	<5	<0.5	1.2	<0.5	<0.5	15.5
K807EW-1		10/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.9	<0.5	<5	<0.5	3	<0.5	<0.5	19.1
K807EW-1		1/25/2000	<0.5	<0.5	<0.5	1.4	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	33.2	<0.5	<5	<0.5	12	2.8	<0.5	**96.3**
K807EW-1		4/14/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.3	<0.5	<5	<0.5	1.7	<0.5	<0.5	10.6
K807EW-1		6/6/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5	<5	<0.5	1.6	<0.5	<0.5	5.5
K807EW-1		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	4	<0.5	<0.5	<0.5	<0.5	16.6
K807EW-1		12/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	14	<0.5	2	<0.5	5.4	0.6	<0.5	**54.4**
K807EW-1		4/12/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.5	<0.5	0.5	<0.5	3.5	<0.5	<0.5	18.5
K807EW-1		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	5.7	<0.3	<3	<0.5	1.6	<0.3	<0.5	22
K807EW-1		7/22/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	1.4	<0.3	<3	<0.5	<0.5	<0.3	<0.5	10.8
K807MW01		6/2/1994			<0.5	<0.5		<0.5		<0.5		<0.5	2.3			<0.5	<0.5	1.5		<0.5
K807MW01	5	11/7/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<10	<0.5	<0.5	0.7	<0.5	<1
K807MW01	5	2/13/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<10	<0.5	<0.5	0.5	<0.5	<1
K807MW01	5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW01		1/13/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		4/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		7/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		10/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		1/26/2000	<0.5	<0.5	<0.5	<0.5	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		4/14/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 2
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Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
K807MW01		9/11/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		11/30/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	3	<0.5	<0.5	0.4	<0.5	<0.5
K807MW01		4/11/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW01		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	0.3	<0.3	<3	<0.5	<0.5	<0.3	<0.5	<0.3
K807MW01		7/22/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	0.9	<0.3	<3	<0.5	<0.5	<0.3	<0.5	<0.3
K807MW01		10/25/2004	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<1	0.66	<0.5	<5	<0.5	<0.5	<0.5	<1	<0.5
K807MW01		3/10/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<1	<0.5
K807MW02		6/2/1994			<0.5	<0.5		<0.5		<0.5		<0.5	<0.5			<0.5	<0.5	<0.5		<0.5
K807MW02	5	11/5/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW02	5	2/13/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW02	5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW02		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		4/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		7/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		10/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		1/25/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		4/13/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW02		9/12/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW03		6/2/1994			<0.5	<0.5		<0.5		<0.5		<0.5	22			<0.5	4.2	2.8		<0.5
K807MW03	5	11/7/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	<0.5	<10	<0.5	5.4	2.1	<0.5	2.1
K807MW03	5	2/13/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	15	<0.5	<10	<0.5	8.6	2.1	<0.5	12
K807MW03	5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.6	<0.5	<10	<0.5	8.7	1.6	<0.5	2.6
K807MW03		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	7.6	<0.5	<5	<0.5	5.6	1.6	<0.5	1.5
K807MW03		4/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.7	<0.5	<5	<0.5	3	1.2	<0.5	<0.5
K807MW03		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	<5	<0.5	3.6	1.5	<0.5	<0.5
K807MW03		10/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	<5	<0.5	2.1	<0.5	<0.5	11.7

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Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
K807MW03		1/25/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	0.4	<0.5	0.6	<0.5	<0.5	<0.5
K807MW03		4/14/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.8	<0.5	<5	<0.5	2.9	0.7	<0.5	<0.5
K807MW03		6/6/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.5	<0.5	<5	<0.5	5.4	1.3	<0.5	1.7
K807MW03		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	11.1	<0.5	2	<0.5	4.5	1.8	<0.5	<0.5
K807MW03		12/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<0.5	3	<0.5	0.9	0.4	<0.5	1.5
K807MW03		4/12/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	7.7	<0.5	<5	<0.5	3.2	0.9	<0.5	<0.5
K807MW03		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	1.2	<0.3	<3	<0.5	0.5	0.3	<0.5	<0.3
K807MW03		7/23/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	4.2	<0.3	<3	<0.5	6.5	0.6	<0.5	0.81
K807MW03		10/25/2004	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<1	<0.5
K807MW03		3/10/2005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<1	<0.5
K807MW04		6/2/1994			<0.5	<0.5		<0.5		<0.5		<0.5	<0.5			<0.5	<0.5	<0.5		<0.5
K807MW04	5	11/7/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW04	5	2/13/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW04	5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW04		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		4/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		10/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		1/25/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		4/13/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW04		9/12/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05	5	11/8/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW05	5	2/14/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW05	5	7/3/1997	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
K807MW05		1/12/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		4/30/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 2
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
K807MW05		7/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		10/29/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		1/25/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		4/14/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		6/5/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		9/13/2001	<0.5	<0.5	<0.5	<0.5	<0.82	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		12/4/2001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		4/12/2002	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	0.3	<0.5	<0.5	<0.5	<0.5	<0.5
K807MW05		3/19/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	0.7	<0.3	<3	<0.5	<0.5	<0.3	<0.5	<0.3
K807MW05		7/22/2003	<0.3	<0.3	<0.5	<0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.5	0.7	<0.3	<3	<0.5	<0.5	<0.3	<0.5	1.5
KU7CPT01		1/18/1994			<0.5	<0.5		<0.5		<0.5		<0.5	10			<0.5	4.9	3		23
KU7CPT02		1/17/1994			24	2.2		1.8		<0.5		<0.5	54			1.3	41	140		**440**
KU7CPT03		1/17/1994			<0.5	<0.5		3.2		<0.5		<0.5	17			<0.5	7.3	<0.5		**110**
KU7CPT04		1/18/1994			<0.5	<0.5		<0.5		<0.5		<0.5	1.3			1.4	<0.5	<0.5		<0.5
KU7CPT05		1/18/1994			<0.5	<0.5		<0.5		<0.5		<0.5	24			<0.5	9.3	4.7		**50**
KU7CPT06		1/18/1994			<0.5	<0.5		<0.5		<0.5		<0.5	71			<0.5	9.9	<0.5		**100**
KU7CPT07		1/19/1994			<0.5	<0.5		<0.5		<0.5		<0.5	200			<0.5	15	11		**190**
KU7CPT08		1/19/1994			<0.5	<0.5		<0.5		<0.5		<0.5	8.6			<0.5	<0.5	<0.5		<0.5
KU7CPT09		1/19/1994			<0.5	<0.5		<0.5		<0.5		<0.5	110			<0.5	32	31		<0.5
KU7CPT10		1/19/1994			9	<0.5		<0.5		<0.5		<0.5	620			<0.5	140	10		**170**
KU7CPT11		1/19/1994			<0.5	<0.5		<0.5		<0.5		<0.5	1.6			<0.5	<0.5	<0.5		<0.5
KU7CPT12		1/20/1994			<0.5	<0.5		<0.5		<0.5		<0.5	7			<0.5	<0.5	5.9		1.7
KU7CPT13		1/20/1994			<0.5	<0.5		<0.5		<0.5		<0.5	2.3			<0.5	<0.5	0.7		<0.5
KU7CPT14		1/20/1994			<0.5	<0.5		<0.5		<0.5		<0.5	57			<0.5	7.6	<0.5		<0.5
KU7CPT15		1/20/1994			<0.5	<0.5		<0.5		<0.5		<0.5	<0.5			<0.5	<0.5	<0.5		<0.5
KU7SP1	12	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP10	18	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1

Table 2
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
KU7SP11	22	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP12	22	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP13	17	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	1	<0.5	<0.5	2.1
KU7SP2	12	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	3.1
KU7SP3	16	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP4	15	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP5	15	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP6	15	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	1.1
KU7SP7	16	9/23/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP8	22	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	<1
KU7SP9	24	9/25/1996	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	<0.5	1.4

Table 3
VOCs in Groundwater at Eastern End of Building 807 Site
Summary of Proposed Pre-Design Investigation
Former Oakland Army Base, Oakland, California

Monitoring Well ID	Existing or Proposed	Groundwater Sample Analyses[1,2,3]	Soil Sample Analysis[3]	Rationale
807VMW001	Proposed	CVOCs	none	Well will close lateral data gap for vinyl chloride northeast of ICFMW202
807VMW002	Proposed	CVOCs, chemical oxidation treatability testing, bioremediation parameters and *Dhc. Ethenogenesis*	Bench-scale chemical oxidation treatability testing (2 samples)	Well will close lateral data gap for vinyl chloride southwest of ICFMW202
807VMW003	Proposed	CVOCs	none	Well will close lateral data gap for vinyl chloride south of ICFMW222
807VMW004	Proposed	CVOCs, chemical oxidation treatability testing, bioremediation parameters and *Dhc. Ethenogenesis*	Bench-scale chemical oxidation treatability testing (2 samples)	Well will close lateral data gap for vinyl chloride east of ICFMW222
807VMW005	Proposed	CVOCs	none	Well will close data gap regarding current concentration of vinyl chloride beneath easte end of Building 807
BB-3	Existing	none	not applicable	Well is located outside of CVOC plume area
ICFMW201	Existing	CVOCs	not applicable	Current data indicates well is impacted by vinyl chloride below Remediation Goal
ICFMW202	Existing	CVOCs, bioremediation parameters and *Dhc. Ethenogenesis*	not applicable	Current data indicates well is impacted by vinyl chloride above Remediation Goal
ICFMW221	Existing	CVOCs, bioremediation parameters and Dhc. Ethenogenesis	not applicable	Current data indicates well is impacted by vinyl chloride below Remediation Goal
ICFMW222	Existing	CVOCs	not applicable	Current data indicates well is impacted by vinyl chloride above Remediation Goal
K807DW-1	Existing	none	not applicable	Well is screened in deeper aquifer unaffected by shallow CVOC plume
K807EW-1	Existing	CVOCs	not applicable	Current data indicates well is impacted by vinyl chloride below Remediation Goal
K807MW01	Existing	CVOCs	not applicable	Well is located near edge of CVOC plume area
K807MW02	Existing	CVOCs, bioremediation parameters and Dhc. Ethenogenesis	not applicable	Well is located near edge of CVOC plume area
K807MW03	Existing	CVOCs	not applicable	Well is located near edge of CVOC plume area
K807MW04	Existing	none	not applicable	Well is located outside of CVOC plume area
K807MW05	Existing	CVOCs, bioremediation parameters and Dhc. Ethenogenesis	not applicable	Current data indicates well is impacted by vinyl chloride below Remediation Goal

Notes:

CVOCs = Chlorinated volatile organic compounds

[1] Groundwater samples for CVOC analyses will be collected using low-flow techniques and analyzed using EPA Method 8260B.

[2] Chemical oxidation treatability testing includes bench-scale permanganate consumption testing, total and hexavalent chromium analyses, visual observations of oxidation secondary effects and additional CVOC analysis as needed.

[3] Bioremediation parameters include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity and temperature collected by field instrumentation and alkalinity, ferrous iron, manganese, nitrate, sulfate, methane, carbon dioxide, total organic carbon (TOC), dissolved hydrogen and ethene by laboratory analysis.

Table 4
VOCs in Groundwater Near Buildings 808 and 823 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Soil
Former Oakland Army Base, Oakland, California
All results in milligrams per kilogram

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	HEXACHLOROBUTADIENE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			3.8	2.7	2.1	1.7	0.2	0.8	0.1	0.7	0.1	0.9	18	2	46	4.8	2.8	38	2.5	3,600	0.05
0228-13	5	2/28/1990	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.3	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02
CU7WH-09	7	10/24/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
CU7WH-15	7	10/23/1996	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005		<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
ICF11S1	7	10/8/1998	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.056	<0.0056	<0.0056	<0.0056	<0.0056	<0.011
ICF11S2	7.3	10/5/1998	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	<0.0072	0.0015	<0.0072	<0.0072	<0.072	<0.0072	<0.0072	<0.0072	<0.0072	0.0095
IT11S66	0.5	4/18/2002	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	0.004	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062
IT11S66	1.5	4/18/2002	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.005	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
K11S101	2.5	6/19/1997	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053		<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	<0.053	<0.053	<0.0053	<0.0053	<0.0053	<0.0053	<0.053
K11S101	3	6/19/1997	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055		<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055	<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.055
K11S102	3.5	6/19/1997	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056		<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.056	<0.056	<0.0056	<0.0056	<0.0056	<0.0056	<0.056
K11S109	2	6/19/1997	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.0056		<0.0056	<0.0056	<0.0056	<0.0056	<0.0056	<0.056	<0.056	<0.0056	<0.0056	<0.0056	<0.0056	<0.056
K11S109	2.5	6/19/1997	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006		<0.006	<0.006	<0.006	<0.006	<0.006	<0.06	<0.06	<0.006	<0.006	<0.006	<0.006	<0.06
K11S109	6	6/19/1997	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068		<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.068	<0.068	<0.0068	<0.0068	<0.0068	<0.0068	<0.068
OBSB09	7	4/1/2002	<0.0058	<0.0058	<0.0058	<0.0058		<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058		<0.012	<0.0058	<0.0058	<0.0058		<0.0058

Table 5
VOCs in Groundwater Near Buildings 808 and 823 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
11S48	7	1/5/2000	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.3	<0.5	0.6	<0.5	3.6	4.1	<0.5	7.2
11S49	7	1/5/2000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	13	<5	<50	<5	<5	<5	<5	**267**
11S50	7	1/5/2000	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3	<2.5	<25	<2.5	<2.5	<2.5	<2.5	**111**
11S52	7	2/18/2000	<5	<5	<5	<5	<11	<8.9	<5	<5	<5	<5	<5	<5	8	<5	<5	<5	<5	<5
11S53	9	2/18/2000	<0.5	<0.5	<0.5	<0.5	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	1	<0.5	<0.5	<0.5	<0.5	1.3
11S54	9	2/18/2000	<0.5	<0.5	<0.5	<0.5	<1.1	<0.89	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	4.9
11S55	11	2/24/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<5	<0.5	<0.5	<0.5	<0.5	0.4
11S56	11	2/24/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
CU7WH-08	5	11/2/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-08	5	11/4/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-09	5	10/24/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-10	5	10/22/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-13	5	10/22/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-14	5	10/22/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-15	5	10/23/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	0.7	6.3	<0.3	<0.3
CU7WH-17	5	10/23/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CU7WH-18	5	10/23/1996	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
ICF11S1	8	10/8/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.36	<0.5	1.16	<0.5	<0.5	<0.5	<0.5	<0.5
ICF11S12	8	10/29/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.13	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ICF11S2	9	10/2/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.62	<0.5	<0.5	<0.5	0.17	0.23	<0.5	10.4
ICFMW212		4/12/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	<5	<0.5	1.3	<0.5	<0.5	21.7
ICFMW213		4/12/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	11.5
IT11S66	8.25	5/6/2002	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<5	<1	<0.5	<0.5	<1	<0.5
IT11S71		4/29/2002	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	0.3	<0.5	<0.5	<5	<1	<0.5	<0.5	<1	<0.5
K11S101	5	6/19/1997	<1	<1	<1	<1	<1	<1		<1	<1	<1	6	<1	<10	<1	<1	<1	<1	<10
K11S102	10	6/19/1997	<1	<1	<1	<1	<1	<1		<1	<1	<1	4	<1	<10	<1	<1	<1	<1	<10
K11S109	10	6/19/1997	<1	<1	<1	<1	<1	<1		<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<10

Table 5
VOCs in Groundwater Near Buildings 808 and 823 Site
Summary of Analytical Results for CVOCs with Remediation Goals in Groundwater
Former Oakland Army Base, Oakland, California
All results in micrograms per liter

SAMPLING LOCATION ID	SAMPLE DEPTH (FEET BGS)	SAMPLE DATE	1,1,2,2-TETRACHLOROETHANE	1,1,2-TRICHLOROETHANE	1,1-DICHLOROETHANE	1,1-DICHLOROETHENE	1,2,3-TRICHLOROPROPANE	1,2-DICHLOROETHANE	1,2-DICHLOROPROPANE	BROMODICHLOROMETHANE	CARBON TETRACHLORIDE	CHLOROFORM	CIS-1,2-DICHLOROETHENE	DIBROMOCHLOROMETHANE	METHYLENE CHLORIDE	TETRACHLOROETHENE	TRANS-1,2-DICHLOROETHENE	TRICHLOROETHENE	TRICHLOROFLUOROMETHANE	VINYL CHLORIDE
Remediation Goal			1,900	2,800	6,700	33,000	100	1,900	110	850	72	2,500	180,000	2,100	19,000	960	190,000	2,800	2,800,000	32
OBSB09	5	4/2/2002	<0.5	<0.5	<0.5	<0.5		<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5		<0.5
OBSB10	5	4/2/2002	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5		<0.5
OBSB11	5	4/2/2002	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<10	<0.5	<0.5	<0.5		<0.5
OBSB12	5	4/2/2002	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5		<0.5
SMW-33		10/6/1998	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SMW-33		1/8/1999	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
SMW-33		4/28/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
SMW-33		7/27/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
SMW-33		10/26/1999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
SMW-33		2/2/2000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 6
VOCs in Groundwater Near Buildings 808 and 823 Site
Summary of Proposed Pre-Design Investigation
Former Oakland Army Base, Oakland, California

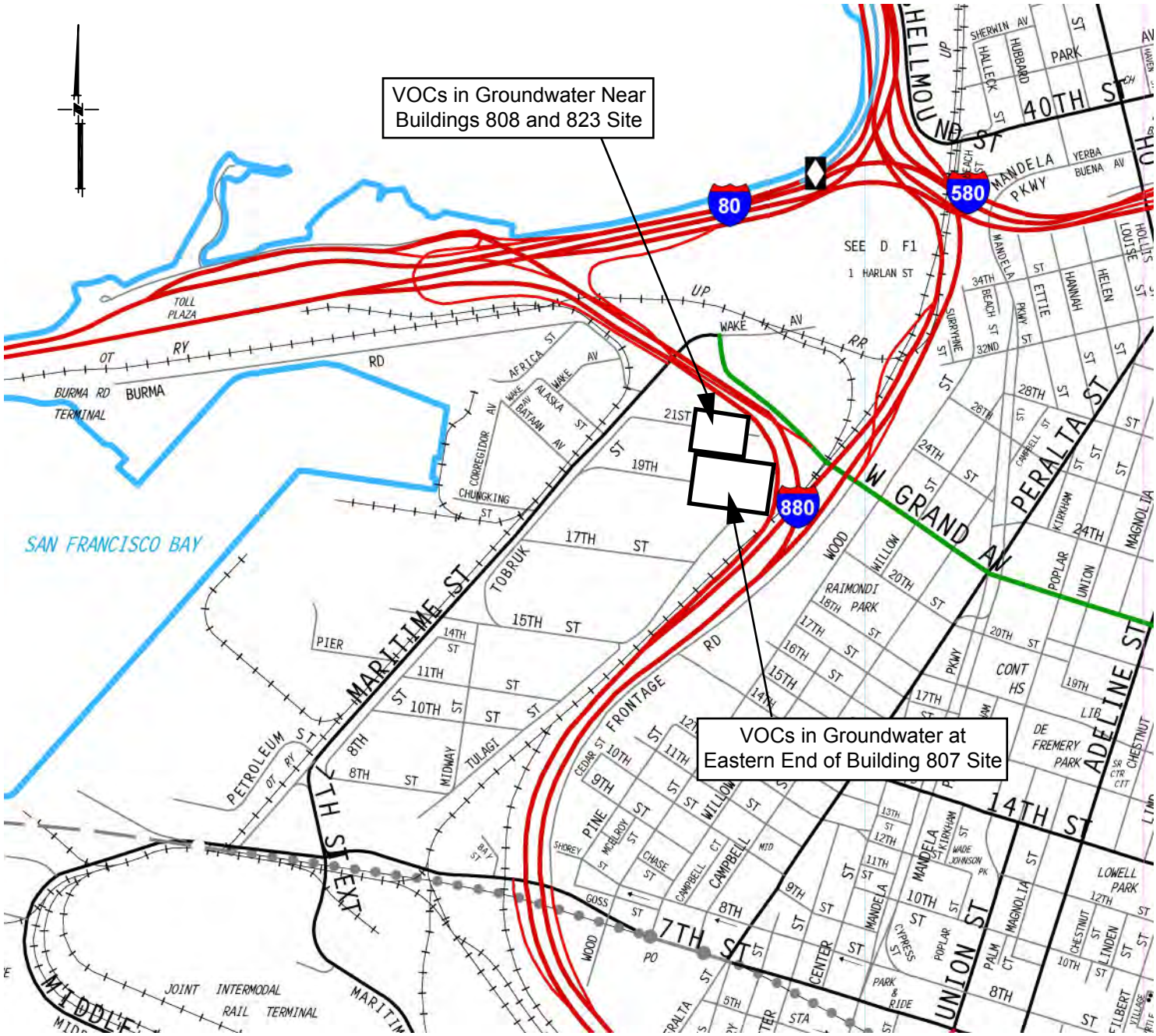
Monitoring Well ID	Existing or Proposed	Proposed Sample Analyses[1]	Rationale
ICFMW212	Existing	CVOCs	Historical data indiactes well is impacted by vinyl chloride below Remediation Goal
ICFMW213	Existing	CVOCs	Historical data indiactes well is impacted by vinyl chloride below Remediation Goal
SMW-33	Existing	CVOCs	Well is located near edge of historical CVOC plume area

Notes:

CVOCs = Chlorinated volatile organic compounds

[1] Groundwater samples for CVOC analyses will be collected using low-flow techniques and analyzed using EPA Method 8260B.

FIGURES



APPROXIMATE LOCATION - NOT TO SCALE

Basemap from Thomas Guide, California, 2004

FIGURE 1
Site Location Map
Economic Development Conveyance Area
Former Oakland Army Base
Oakland, California
September 2005
1142.01

northgate environmental management, inc.

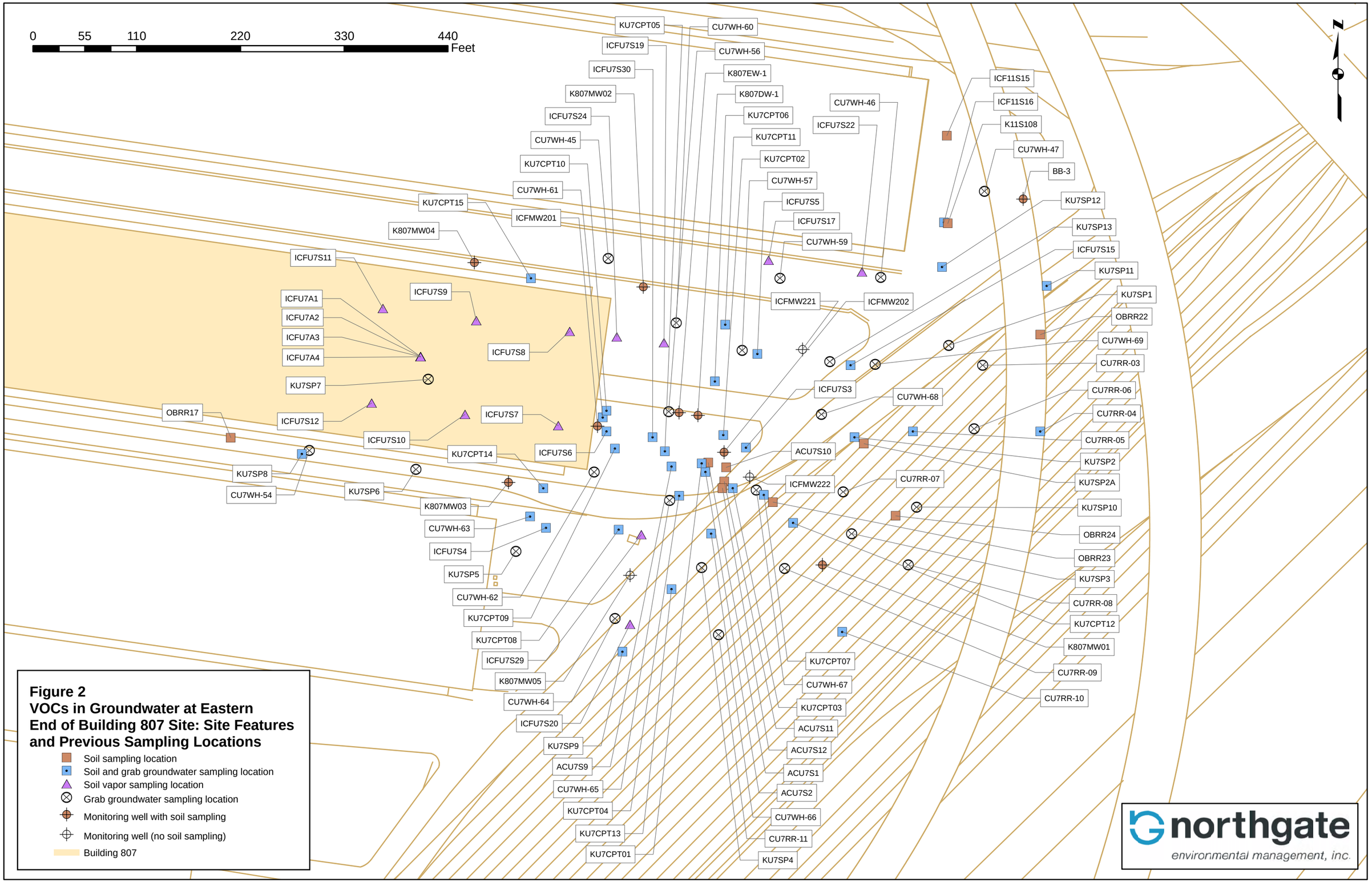


Figure 2
VOCs in Groundwater at Eastern End of Building 807 Site: Site Features and Previous Sampling Locations

- Soil sampling location
- Soil and grab groundwater sampling location
- Soil vapor sampling location
- Grab groundwater sampling location
- Monitoring well with soil sampling
- Monitoring well (no soil sampling)
- Building 807

northgate environmental management, inc.

0 37.5 75 150 225 300 Feet

N

K807MW04
6.43 ft msl

K807MW02
6.39 ft msl

ICFMW221
6.39 ft msl

K807EW-1
6.37 ft msl

ICFMW201
6.39 ft msl

BB-3
not measured

6.40

6.30

6.20

K807MW03
6.23 ft msl

ICFMW202
6.34 ft msl

ICFMW222
6.39 ft msl

6.40

6.30

6.20

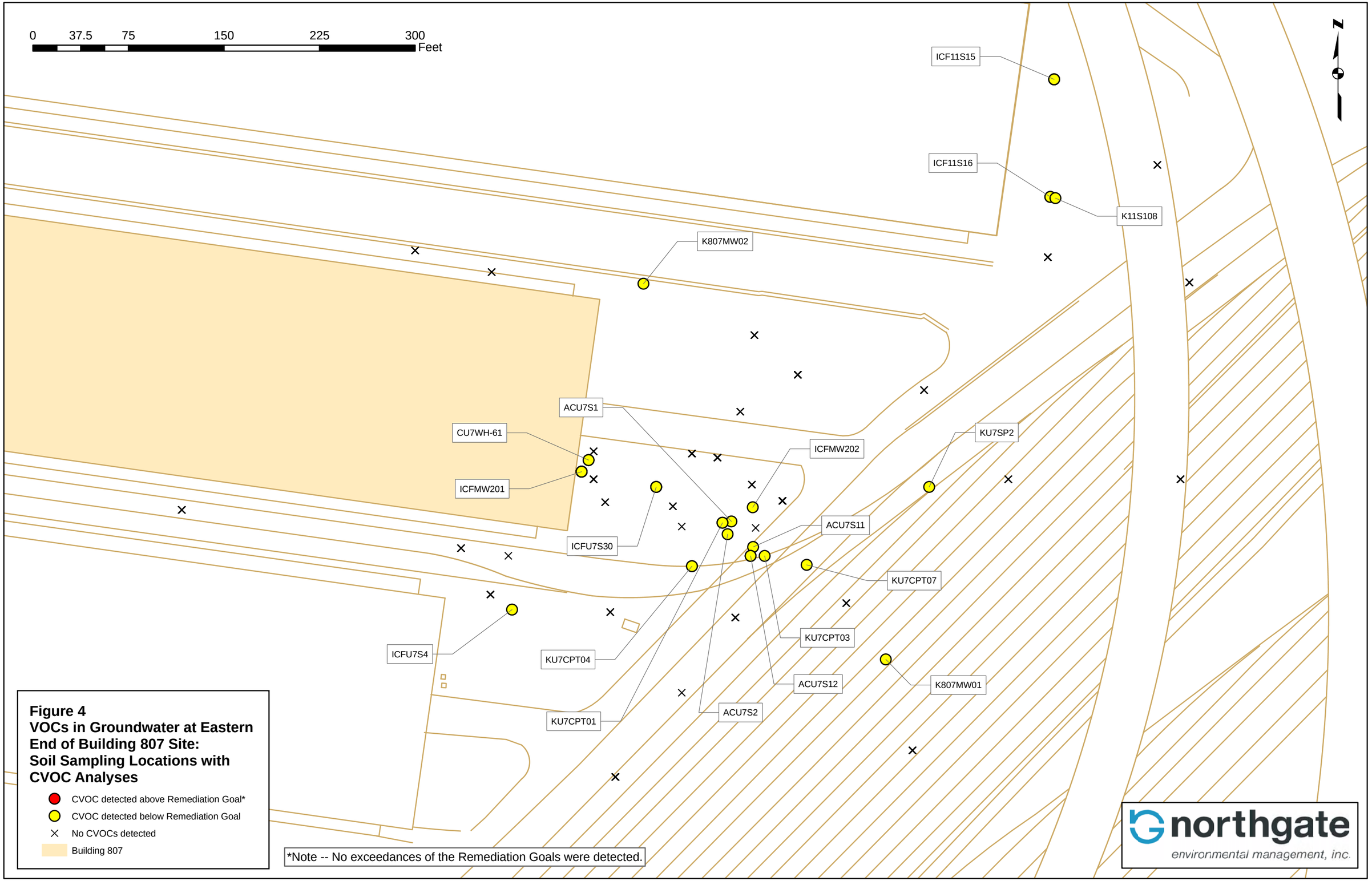
K807MW05
6.28 ft msl

K807MW01
6.28 ft msl

Figure 3
VOCs in Groundwater at Eastern End of Building 807 Site: Shallow Groundwater Elevations on March 9, 2005

Monitoring Well
Inferred Equipotential Contour Line
Building 807

northgate
environmental management, inc.


0
37.5
75
150
225
300
Feet
N
ICF11S15
ICF11S16
K11S108
K807MW02
ACU7S1
CU7WH-61
ICFMW201
ICFMW202
KU7SP2
ICFU7S30
ACU7S11
KU7CPT07
KU7CPT03
ICFU7S4
KU7CPT04
ACU7S12
K807MW01
ACU7S2
KU7CPT01
Figure 4
VOCs in Groundwater at Eastern End of Building 807 Site: Soil Sampling Locations with CVOC Analyses
CVOC detected above Remediation Goal*
CVOC detected below Remediation Goal
No CVOCs detected
Building 807
*Note -- No exceedances of the Remediation Goals were detected.
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environmental management, inc.

0 37.5 75 150 225 300
Feet

N

ICFMW201 (4/22/1999)
11.5 ft bgs: 0.01 mg/kg
11.75 ft bgs: 0.013 mg/kg

ICFMW202 (4/22/1999)
11.25 ft bgs: 0.004 mg/kg

Figure 5
VOCs in Groundwater at Eastern End of Building 807 Site: Analytical Results for Vinyl Chloride in Soil (Remediation Goal = 0.05 mg/kg)

- Vinyl chloride detected above Remediation Goal*
- Vinyl chloride detected below Remediation Goal
- No vinyl chloride detected
- Building 807

*Note -- No exceedances of the Remediation Goals were detected.

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environmental management, inc.

0 37.5 75 150 225 300
Feet

N

KU7CPT06
CU7WH-57
KU7CPT10
K807EW-1
CU7WH-61
KU7CPT02
ICFMW201
ICFMW202
ICFU7S3
ICFMW222
KU7CPT05
KU7CPT07
ACU7S9
KU7CPT01
KU7CPT03
CU7WH-67
ACU7S2

Figure 6
VOCs in Groundwater at Eastern End of Building 807 Site: Historical Groundwater Sampling Locations with CVOC Analyses

- Monitoring well sample
- CVOC detected above Remediation Goal
- CVOC detected below Remediation Goal
- No CVOCs detected
- Building 807

Note -- All groundwater samples not marked as monitoring well samples are grab groundwater samples.

northgate
environmental management, inc.

0 37.5 75 150 225 300
Feet

N

Figure 7
VOCs in Groundwater at Eastern End of Building 807 Site: Historical Maximum Vinyl Chloride Detections in Groundwater
(Remediation Goal = 32 ug/L)

- Monitoring well sample
- Vinyl chloride detected above Remediation Goal
- Vinyl chloride detected below Remediation Goal
- No vinyl chloride detected
- Building 807

Note -- All groundwater samples not marked as monitoring well samples are grab groundwater samples.

northgate
environmental management, inc.

0 37.5 75 150 225 300 Feet

N

K807MW04
9/12/2001
<0.5 ug/L

K807MW02
9/12/2001
<0.5 ug/L

BB-3
1/31/2000
<0.5 ug/L

ICFMW221
3/10/2005
<0.5 ug/L

K807EW-1
7/22/2003
10.8 ug/L

ICFMW201
3/10/2005
11 ug/L

ICFMW202
3/10/2005
240 ug/L

ICFMW222
3/10/2005
67 ug/L

K807DW-1
7/22/2003
<0.3 ug/L

K807MW03
3/10/2005
<0.5 ug/L

K807MW01
3/10/2005
<0.5 ug/L

K807MW05
7/22/2003
1.5 ug/L

Figure 8
VOCs in Groundwater at Eastern End of Building 807 Site: Vinyl Chloride Analytical Results for Latest Monitoring Well Sampling Events (Remediation Goal = 32 ug/L)

Monitoring Well

Building 807

northgate
environmental management, inc.

0 37.5 75 150 225 300 Feet

N

K807MW04
Proposed Analyses:
none

K807MW02
Proposed Analyses:
Groundwater -- CVOCs, bioremediation parameters and Dhc. ethenogenesis

K807EW-1
Proposed Analyses:
Groundwater -- CVOCs

BB-3
Proposed Analyses:
none

K807DW-1
Proposed Analyses:
none

807VMW005
Proposed Analyses:
Soil -- none
Groundwater -- CVOCs

ICFMW221
Proposed Analyses:
Groundwater -- CVOCs, bioremediation parameters and Dhc. ethenogenesis

807VMW001
Proposed Analyses:
Soil -- none
Groundwater -- CVOCs

ICFMW201
Proposed Analyses:
Groundwater -- CVOCs

ICFMW202
Proposed Analyses:
Groundwater -- CVOCs, bioremediation parameters and Dhc. ethenogenesis

K807MW03
Proposed Analyses:
Groundwater -- CVOCs

807VMW004
Proposed Analyses:
Soil -- Bench-scale chemical oxidation treatability testing (2 samples)
Groundwater -- CVOCs, chemical oxidation treatability testing, bioremediation parameters and Dhc. ethenogenesis

807VMW002
Proposed Analyses:
Soil -- Bench-scale chemical oxidation treatability testing (2 samples)
Groundwater -- CVOCs, chemical oxidation treatability testing, bioremediation parameters and Dhc. ethenogenesis

K807MW01
Proposed Analyses:
Groundwater -- CVOCs

K807MW05
Proposed Analyses:
Groundwater -- CVOCs, bioremediation parameters and Dhc. ethenogenesis

807VMW003
Proposed Analyses:
Soil -- none
Groundwater -- CVOCs

ICFMW222
Proposed Analyses:
Groundwater -- CVOCs

Figure 9
VOCs in Groundwater at Eastern End of Building 807 Site: Proposed Investigation

- Proposed Monitoring Well
- Monitoring Well
- Building 807

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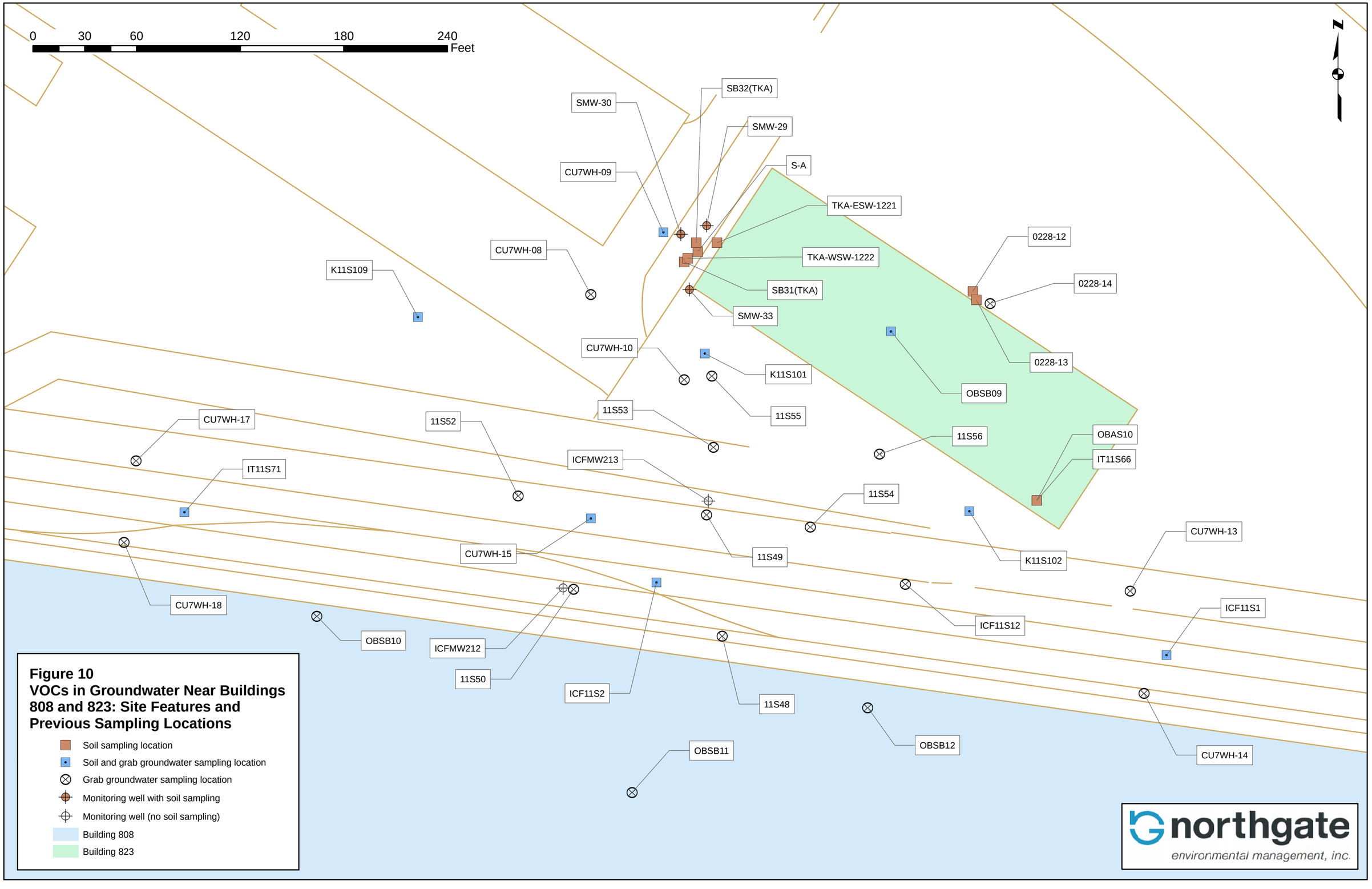
0
30
60
120
180
240
Feet
N
SB32(TKA)
SMW-30
SMW-29
S-A
CU7WH-09
TKA-ESW-1221
0228-12
CU7WH-08
TKA-WSW-1222
K11S109
0228-14
SB31(TKA)
SMW-33
CU7WH-10
0228-13
K11S101
OBSB09
11S53
11S55
11S56
OBAS10
CU7WH-17
11S52
IT11S66
ICFMW213
IT11S71
11S54
CU7WH-13
11S49
CU7WH-15
K11S102
CU7WH-18
ICF11S12
ICF11S1
OBSB10
ICFMW212
11S50
ICF11S2
11S48
OBSB12
OBSB11
CU7WH-14
Figure 10
VOCs in Groundwater Near Buildings 808 and 823: Site Features and Previous Sampling Locations
Soil sampling location
Soil and grab groundwater sampling location
Grab groundwater sampling location
Monitoring well with soil sampling
Monitoring well (no soil sampling)
Building 808
Building 823
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0 25 50 100 150 200 Feet

N

IT11S66

ICF11S2

Figure 11
VOCs in Groundwater Near Buildings 808 and 823: Soil Sampling Locations with CVOC Analyses

- CVOC detected above Remediation Goal*
- CVOC detected below Remediation Goal
- No CVOCs detected
- Building 808
- Building 823

*Note -- No exceedances of the Remediation Goals were detected.

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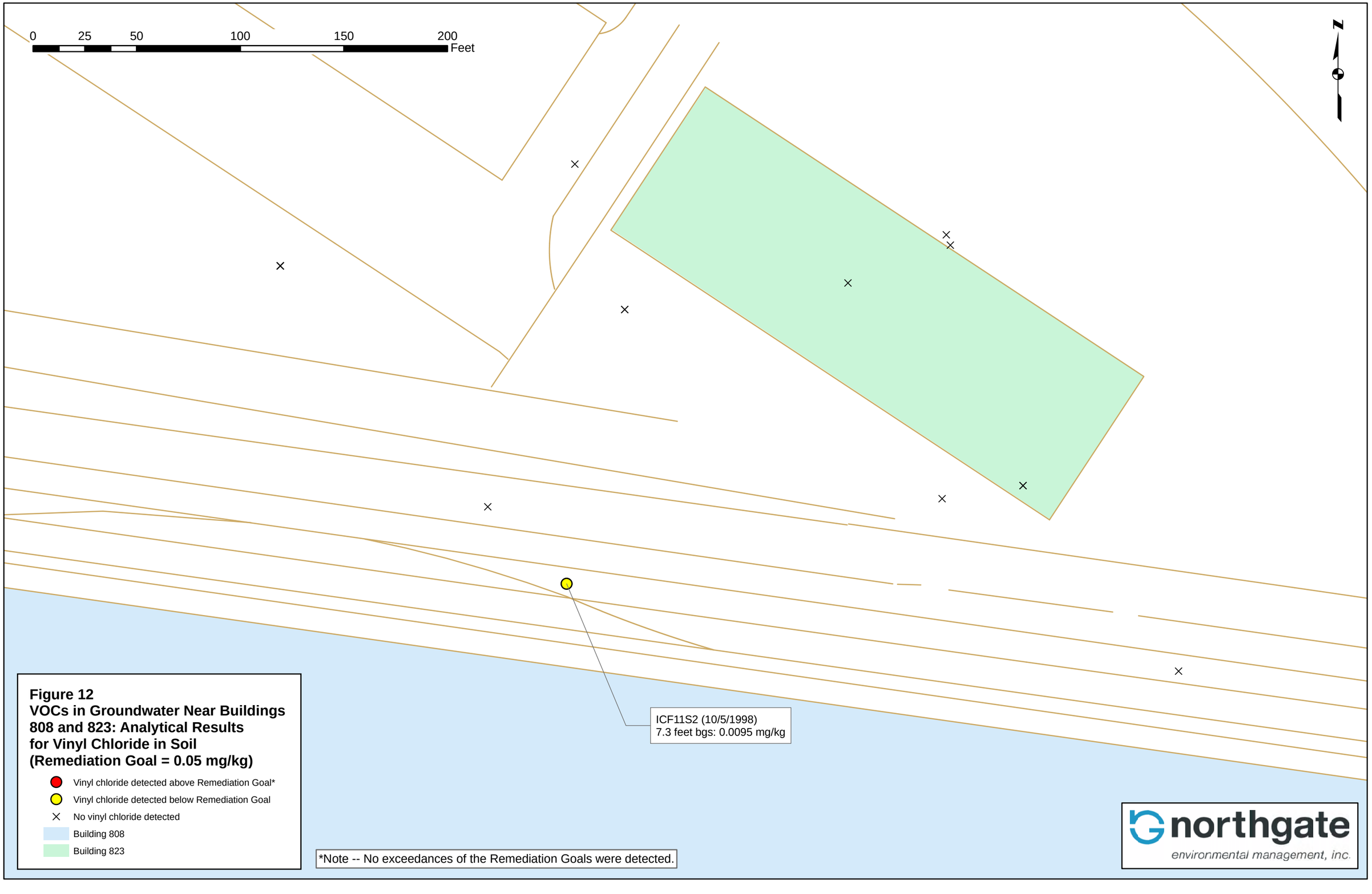
0
25
50
100
150
200
Feet
N
ICF11S2 (10/5/1998)
7.3 feet bgs: 0.0095 mg/kg
Figure 12
VOCs in Groundwater Near Buildings 808 and 823: Analytical Results for Vinyl Chloride in Soil (Remediation Goal = 0.05 mg/kg)
Vinyl chloride detected above Remediation Goal*
Vinyl chloride detected below Remediation Goal
No vinyl chloride detected
Building 808
Building 823
*Note -- No exceedances of the Remediation Goals were detected.
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0 25 50 100 150 200 Feet

N

K11S101
OBSB09
11S55
CU7WH-15
11S53
K11S102
11S52
IT11S66
IT11S71
ICFMW213
11S54
11S49
ICFMW212
ICF11S12
ICF11S1
11S50
ICF11S2
11S48
OBSB11

Figure 13
VOCs in Groundwater Near Buildings 808 and 823: Groundwater Sampling Locations with CVOC Analyses

- Monitoring well sample
- CVOC detected above Remediation Goal
- CVOC detected below Remediation Goal
- No CVOCs detected
- Building 808
- Building 823

Note -- All groundwater samples not marked as monitoring well samples are grab groundwater samples.

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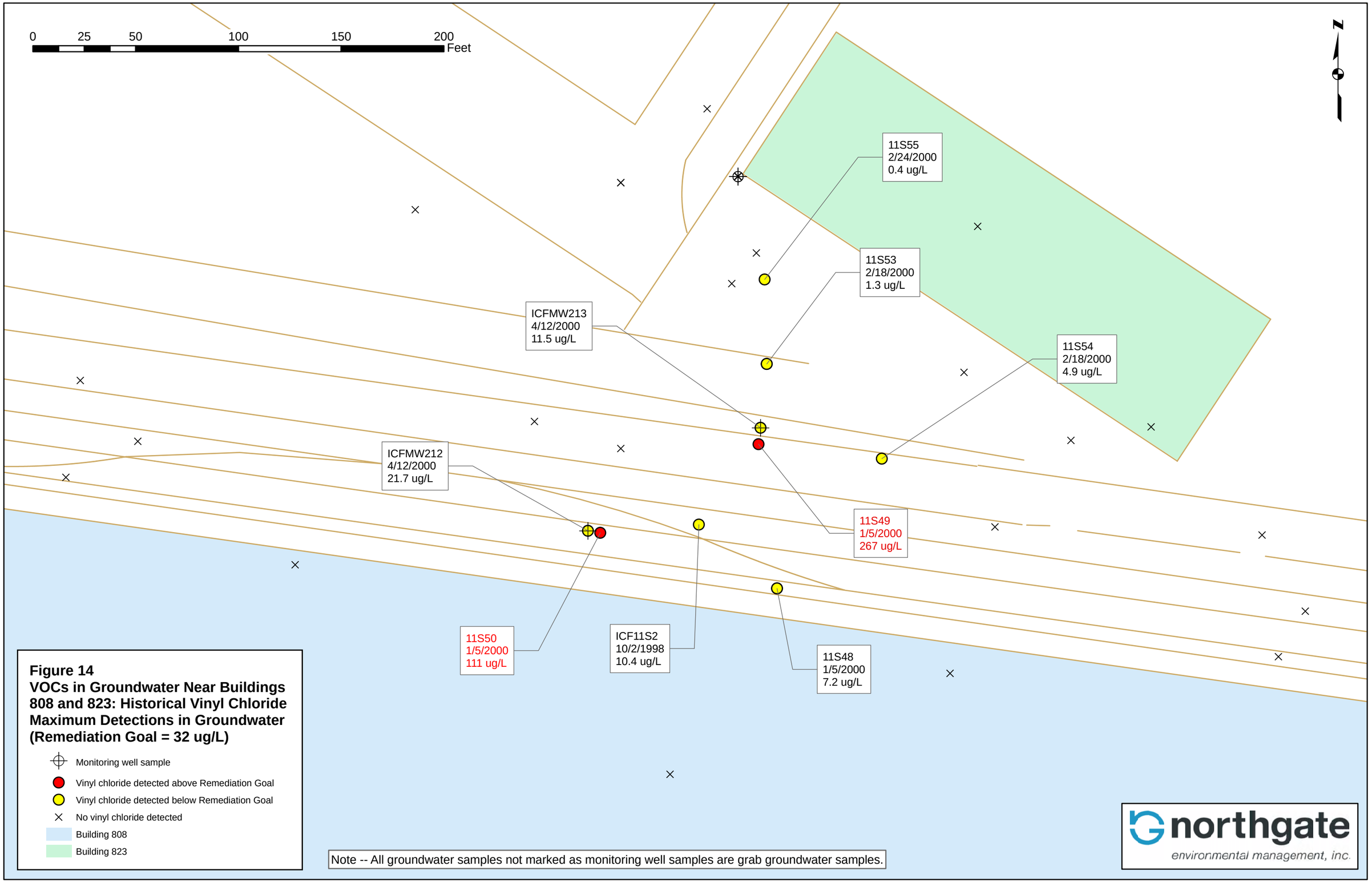
0
25
50
100
150
200
Feet
N
11S55
2/24/2000
0.4 ug/L
11S53
2/18/2000
1.3 ug/L
ICFMW213
4/12/2000
11.5 ug/L
11S54
2/18/2000
4.9 ug/L
ICFMW212
4/12/2000
21.7 ug/L
11S49
1/5/2000
267 ug/L
11S50
1/5/2000
111 ug/L
ICF11S2
10/2/1998
10.4 ug/L
11S48
1/5/2000
7.2 ug/L
Figure 14
VOCs in Groundwater Near Buildings 808 and 823: Historical Vinyl Chloride Maximum Detections in Groundwater (Remediation Goal = 32 ug/L)
Monitoring well sample
Vinyl chloride detected above Remediation Goal
Vinyl chloride detected below Remediation Goal
No vinyl chloride detected
Building 808
Building 823
Note -- All groundwater samples not marked as monitoring well samples are grab groundwater samples.
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0 25 50 100 150 200 Feet

N

SMW-33
2/2/2000
<0.5 ug/L

ICFMW213
4/12/2000
11.5 ug/L

ICFMW212
4/12/2000
21.7 ug/L

Figure 15
VOCs in Groundwater Near Buildings 808 and 823: Vinyl Chloride Analytical Results for Latest Monitoring Well Sampling Events
(Remediation Goal = 32 ug/L)

Monitoring Well
Building 808
Building 823

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0 25 50 100 150 200 Feet

N

SMW-33
Proposed Analyses: CVOCs

ICFMW213
Proposed Analyses: CVOCs

ICFMW212
Proposed Analyses: CVOCs

Figure 16
VOCs in Groundwater Near Buildings 808 and 823: Proposed Investigation

Monitoring Well
Building 808
Building 823

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